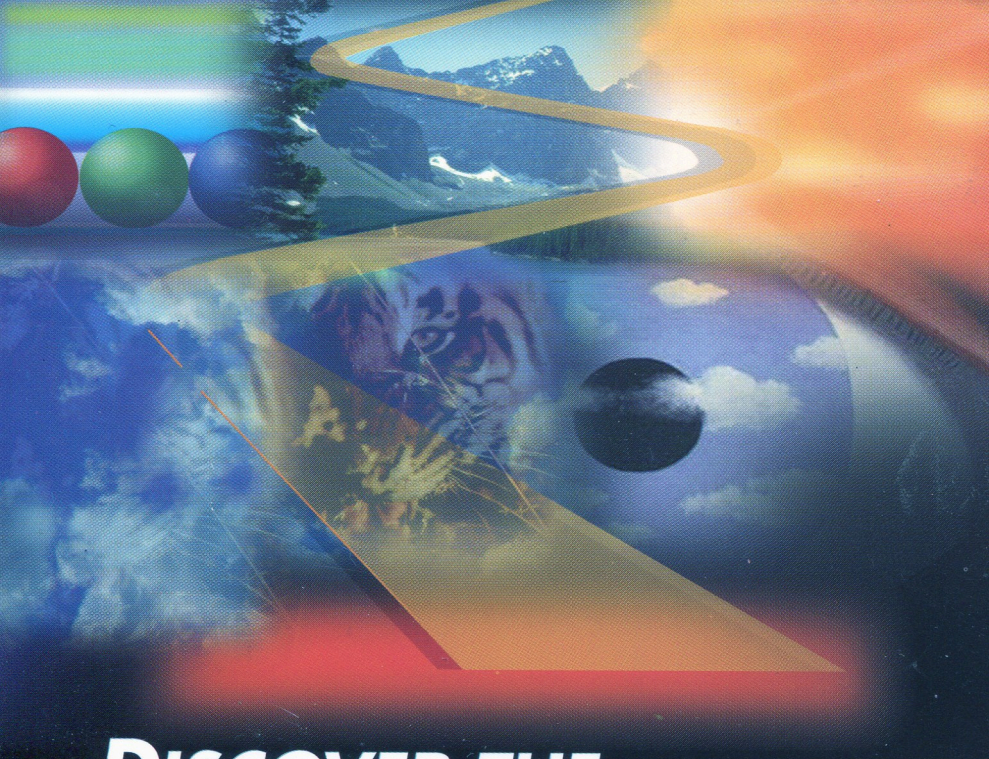


DISCOVER THE WORLD WIDE WEB WITH YOUR Sportster®

sams net

U.S. Robotics®
The Intelligent Choice in Information Access



DISCOVER THE WORLD WIDE WEB WITH YOUR Sportster

John December
Neil Randall
Wes Tatters

sams net

201 West 103rd Street
Indianapolis, Indiana 46290

Copyright © 1995 by Sams.net Publishing

FIRST EDITION

All rights reserved. No part of this book shall be reproduced, stored in a retrieval system, or transmitted by any means, electronic, mechanical, photocopying, recording, or otherwise, without written permission from the publisher. No patent liability is assumed with respect to the use of the information contained herein. Although every precaution has been taken in the preparation of this book, the publisher and author assume no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained herein. For information, address Sams.net Publishing, 201 W. 103rd St., Indianapolis, IN 46290.

International Standard Book Number: 1-57521-050-9

Library of Congress Catalog Card Number: 95-71224

98 97 96 4

Interpretation of the printing code: the rightmost double-digit number is the year of the book's printing; the rightmost single-digit, the number of the book's printing. For example, a printing code of 95-1 shows that the first printing of the book occurred in 1995.

Composed in Agaramond and MCPdigital by Macmillan Computer Publishing

Printed in the United States of America

Trademarks

All terms mentioned in this book that are known to be trademarks or service marks have been appropriately capitalized. Sams.net Publishing cannot attest to the accuracy of this information. Use of a term in this book should not be regarded as affecting the validity of any trademark or service mark. Sportster is a registered trademark of U.S. Robotics, Inc.

Overview

1	The World Wide Web: Interface on the Internet	1
2	Putting It All Together: The World Wide Web	9
3	Spry Mosaic	23
4	The World-Wide Tour	53
5	Finding It on the Web: Directories, Search Tools, and Cool and Unusual Places	67
6	Using the Web for Business	97
7	Education, Scholarship, and Research	115
8	Using the Web at Home	133
	Index	149

Contents

1 The World Wide Web: Interface on the Internet 1
The Concept of the World Wide Web 3
The Conceptual Makeup of the Web 4

2 Putting It All Together: The World Wide Web 9
History of the Web 11
How the Web Works: HTTP 13
How the Web Works: HTML 15
Accessing the Web 16
Uses of the Web 17
The Future of the Web 21

3 Spry Mosaic 23
Spry Mosaic 27
Advanced Capabilities 44

4 The World-Wide Tour 53
The Virtual Tourist 54

5 Finding It on the Web: Directories, Search Tools, and Cool and Unusual Places 67
WWW Directories 68
WWW Search Tools 77
Cool and Unusual Places 86

6 Using the Web for Business 97
Finding Business and Commercial Sites on the Web 99
Special-Interest Business Sites 100
Large Corporations on the Web 101
Industrial Malls 105
Business Services on the Web 107
Municipality-Based Business Pages 109
Internet Directory 110

7 Education, Scholarship, and Research 115
Motivating Students to Learn 116
Schools on the Web 117
Tutorial Modules 122
Educational Resources 122
Collections of Educational Sites on the Web 125

8 Using the Web at Home 133
Games 133
Online News and Magazines 143

Index 149



By Neil Randall

The World Wide Web: Interface on the Internet

For any number of historical reasons, the Internet has emerged as a huge, rich source of information accessible only via a series of not-so-friendly interfaces. The basic commands for Telnet, FTP, Archie, WAIS, and even e-mail are powerful but unintuitive, and the rapid growth of the Internet's user base has resulted in an increasing number of users who have neither the patience nor the desire to learn the intricacies of these interfaces.

Even those who know them, however, are aware that easier systems can very quickly result in greater productivity, an awareness that has spawned such eminently usable tools as the popular Gopher. But Gopher is limited as an information source by the restrictions of its display; a gopher is primarily a table of contents through which users read or download files—and tables of contents are useful for some but by no means all types of information reservoirs.

Enter the World Wide Web. Conceptualized not long after Gopher itself, the Web began life as a project designed to distribute scientific information across computer networks in a system known as *hypertext.* The idea was to allow collaborative researchers to present their research complete with text, graphics, illustrations, and ultimately sound, video, and any other means required.

Important ideas within or across publications would be connected by a series of hypertext links (or just *hyperlinks*), much like the information displays made both possible and plentiful through the Macintosh's famous Hypercard program and similar interfaces available on the NeXT, Amiga, X Window, and Microsoft Windows platforms. Users would be able to traverse Internet documents by selecting highlighted items and thereby moving to other, linked documents; and in the case of graphical displays, they would see these documents complete with graphics and other multimedia elements.

The World Wide Web project has made possible the idea of accessible and attractive interfaces on the Internet. Using the Web requires an Internet account and a piece of software known as a World Wide Web client, or browser, and it is the browser's task to display Web documents and allow the selection of hyperlinks by the user.

With a graphical Web browser, you see formatted documents that contain graphics and highlighted hyperlinks. These browsers let you navigate the Internet not by entering commands, but rather by moving the mouse pointer to the desired hyperlink and clicking. Instantly, the World Wide Web software establishes contact with the remote computer and transfers the requested file to your machine, displaying it in your browser as another formatted, hyperlinked document. You can "surf" the Web by hopping from hyperlink to hyperlink without delving deeply into the contents of any particular document, or you can search the Web for specific documents with specific contents, poring over them as you would a book in the library.

But what *is* the World Wide Web? Where did it come from, and why is it so popular and so potentially important? It is clearly a system of both communication and publication, but how does it work and what can we expect in its future?

These are the questions answered briefly in this chapter and the next. More importantly, however, they're questions explored across hundreds of documents on the Web itself, and in magazines, journals, and research reports the world over. The Web is among the most rapidly adopted technological entities of a century that has seen many, and understanding it might be crucial for understanding the next century.

Let's get started.

The Concept of the World Wide Web

The Internet, it is said, is in need of a "killer app." It needs one tool, one program, one application that will take it from being a much-hyped but difficult-to-use linking of computers around the world to being a highly informative, highly usable database and communications tool. The spreadsheet was the killer app for PCs a long time ago, but so far the Net doesn't have one. Some have given "killer app" status to the immensely popular program called Mosaic, but Mosaic still has its difficulties and its limitations. The same holds true for the equally popular Netscape Navigator, which has also been touted as a killer app, and for all the various alternative and commercial Web browsers that have hit the market over the past year. The true killer app of the Internet remains somewhere around the corner, and nobody knows if just *one* killer app can handle the Internet's complexity. Until we have one, we simply won't know.

What the Internet does have, however, is a killer *concept*—and the name of that concept is the World Wide Web. In only a few short years of existence, the Web has captured the imagination of data searchers and information surfers alike. Its popularity isn't difficult to understand: The World Wide Web provides the technology needed to offer a navigable, attractive interface for the Internet's vast sea of resources, in much the same way that the toolbar on a word processor screen obscures the intimidating codes that the program actually consists of. Given the Net's history of nearly impenetrable commands and procedures, and the trend in today's software to hide complexity behind usable interfaces, this capability is essential if the Net is to become a mainstream set of applications.

But it's important to realize that the Web is a *concept*, not a program, not a system, and not even a specific protocol. It might be more accurate, in fact, to call it an interface, but even that wouldn't be quite right. The most accurate terminology might be meta-interface—an interface that incorporates other interfaces—but words with the word *meta* as a prefix went out of favor sometime during the early nineties. Calling it a tool would be far too restrictive, and calling it a set of applications and interfaces would be reasonably accurate but incredibly clumsy. So let's just stick with "concept," because that's as close as we might be able to get.

The Conceptual Makeup of the Web

Calling the Web a *concept*, however, doesn't answer the question of what the World Wide Web actually is. Technically, the Web is nothing more than a distributed hypermedia system, but *distributed hypermedia system* is surely no more understandable a term than *concept* itself.

Right now, though, let's concentrate on defining the World Wide Web, or at least providing a definition that helps understand both its past and its future. To do so, we must turn to the three ideas mentioned above: hypertext, the Internet, and multimedia.

Hypertext is an idea that was introduced way back in the seventies by the sometimes visionary, sometimes flaky, and always provocative Ted Nelson. Hypertext is deceptively simple. A hypertext document is one that provides clearly visible links to other documents; and in a hypertext computer environment, selecting a link in one document moves you directly to the other. Nelson's idea was to link all the world's information in a huge hypertext system. The World Wide Web is closer than any other system so far to accomplishing that idea, even though it remains a long, long way from fulfilling Nelson's vision.

The second system inherent in the Web's design is the Internet. The Internet is a global system of networked computers that allows user-to-user communication and transfer of data files from one machine to any other on the network.

The Net is the basis of the fictional *matrix* or *web* found in the science fiction of such authors as William Gibson and Bruce Sterling, and the basis, as well, of the Clinton administration's much-hyped information superhighway (or, more properly, Global Information Infrastructure). The World Wide Web, in fact, is the closest thing we have now to approximating any of those fictional or semi-fictional technologies.

It's important to note, however, that *the Web as a system does not require the Internet.* In fact, a distributed information system based on the Web can be constructed on *any* local-area or wide-area network, and in fact such systems are being developed all the time.

But the first two words in *World Wide Web* are "world wide," so it makes little sense to talk about the Web without basing it in world-wide networking—and the only (relatively) open (relatively) world-wide network now available is the Internet. As a result, we'll build the Internet into our definition.

Even so, it's useful to keep in mind that the World Wide Web is *not* the Internet. As the focus of popular and media attention moved over the past year and a half from e-mail and newsgroups to the Web and, in particular, Mosaic and Netscape, the perception seemed to emerge that the Web and the Net were synonymous. Today's Web clients can perform FTP, Gopher, and even Usenet access, so it's tempting to see them as the Net's primary interface. But these technologies are in fact separate from the Web itself, even though they're increasingly becoming usable through Web interfaces. Electronic mail remains the biggest hold-out—most browsers let you send mail, but none offers a truly integrated mail reader—and other Net technologies require proxies and/or gateways to make them work at all. Even the technologies that are included in browsers are usually better accessed through a program dedicated to their use, so it's not even fair to say that the Web is the best means of working with the entire Net. Still, what can't be denied is that the World Wide Web has become the most famous Internet item, and certainly the most popular.

So far, we've looked at hypertext, and we've drawn in the Internet. Good, but not good enough. There's another concept involved as well: *multimedia.*

Although we do not discuss multimedia at great length here, for now let's just say that, as its name suggests, multimedia combines various presentational technologies in an effort to appeal to as many senses as possible. (Actually, the word should be multimedi*um*—like multipart, multisession, multigerm, and multilane—but we'll let the linguists battle over that one.)

Put a bit more simply, multimedia draws on graphics, sound, animation, and video to create a full, rich computing experience. And for the first time, through browsers such as Mosaic, Cello, MacWeb, Netscape, and Viola, the World Wide Web offers a multimedia experience for Internet users.

While certainly in need of further development, the Web already lets information presenters place graphics, sound, and video within the page, and users with a direct, high-speed connection can download them quickly enough to feel as if they're participating in full multimedia. With a 14.4 kbps modem, the download process is far too slow; but within the next couple of years, high-speed access should be much more available and affordable. The important point is that the groundwork has been laid.

So what is it, then? Let's try this: *The World Wide Web is a convergence of computational concepts for presenting and linking information dispersed across the Internet in an easily accessible way.*

Does this help? Well, maybe. Other definitions of the Web tend to use phrases such as "network information delivery system" and "distributed information system"; but no matter how technically accurate these definitions are, they just don't seem very useful, because every term with them needs an individual definition as well. Arguably, so does the rather vague *concept* in our own definition, but we know enough about the word *concept* not to need a firm definition. *Concept* is uncertain, volatile, and difficult to grasp, but so is the Web itself—not as a definable computer technology, but rather as a combination of its specifications and its uses. Using the term *concept* might seem like an author's unnecessary avoidance, but anything more precise would almost certainly be outdated within months.

In its initial proposal, the Web was simply termed "a hypertext project," but it clearly became more than that. What our new definition attempts to do is explain that the Web is a cleverly

designed collection of interesting concepts, and allow for the very real possibility that other concepts will soon merge with it.

In fact, this is already happening. Technologies such as WAIS (Wide Area Information Servers) and Archie (the long-lived search engine) are already being programmed into Web-based search tools, and this means that some of the Internet's techniques are already becoming integrated into the Web's conceptual framework. The most successful technologies are those that make their individual components transparent; in the case of the World Wide Web, this seems to be happening early in its history.

The Web contains the technologies necessary to give the Internet a pretty face. Web browsers that take full advantage of these technologies make the Internet easier to use. It's not hard to see where in the history of computing these two crucial ideas—attractiveness and usability—came from. Essentially, the Web and its browsers have done for the Internet in 1994 what the Macintosh did for the personal computer a decade earlier. There were problems with the first Macs from a technological standpoint, and they were written off as toys by the business and computing communities, but they hung on and thrived on the strength of their interface.

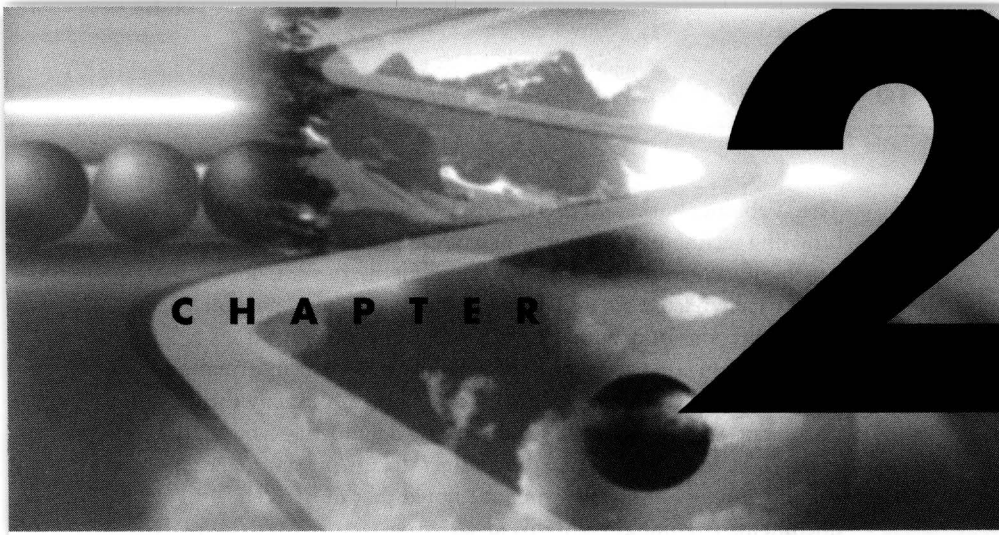
Simply put, people could use Macintoshes easily, and that's something that was never true of the IBM PC or its mainframe predecessors. The Mac hid the difficulties of command-line computing under a bunch of objects you could click on with a funny-shaped thing called a mouse, and in doing so it opened computing to the masses. When Microsoft released Windows 3.0 some years later with its iconic, graphic, point-and-click interface (which had originally been developed by Xerox), the masses indeed took over.

Ten years later, graphical World Wide Web browsers such as Mosaic, Netscape, WinWeb, and MidasWWW offer an interface that has its technological problems, that oversimplifies some important Internet procedures, and that has been called a toy for people who want to glide over the Net rather than delve into it. But just like the Mac, it has thrived because of its interface, and at this time it threatens to overtake all other Internet use, perhaps even the most important Internet tool, electronic mail.

Actually, this comparison between the Mac and the Web isn't quite true, because although the Mac offered just one interface, the Web itself allows all kinds. Its most important interface, however—the graphical, multimedia, point-and-click system offered by Cello, Mosaic, and others, is attractive for precisely the same reasons as the Mac and Windows. No matter what its detractors might argue, the World Wide Web offers the Internet to the masses, and that's its true power. No longer do people have to master the vagaries of FTP and Archie and WAIS searching (although the Web's own search procedures demand considerable practice themselves), and as the Web fully develops it should fully incorporate e-mail, newsgroups, telnetting, and other technologies as well.

Different front ends to the Web will compete for our attention—currently we have Lynx, Viola, Cello, MacWeb, WinWeb, the GNN Browser (America Online), and others—but the principle will remain the same: Link the information, let the users follow whatever path they choose, and once they reach their destination, let them do with the information whatever they please.

Given all this, it's easy to see why the term "World Wide Web" has become, for many people (including those who actually know better) synonymous with the term "Internet." In fact, it's the potential of the synonymity that makes this book possible in the first place. If you want to master the Internet through the mid- to late nineties, you can't possibly do so without mastering the Web as well. Web sites are popping up everywhere, Web designers and technicians are being hired and deployed, and the Web has even become an add-on for the planet's two most popular word processing packages. Quite literally, it's become unavoidable.



By Neil Randall

Putting It All Together: The World Wide Web

The Web is a by-product of the Internet, created because of the Internet's overwhelming size. There is so much information available across the computers and networks that make up the Internet that finding and actually using the Internet is very, very difficult. We live in an age of information, but keep in mind that information—as its name implies—is *formed.* Having access to huge amounts of information is part of the Internet's charm, but perhaps only a small part; more significant is being able to find, view, and make use of this information. The World Wide Web, more than any other Internet concept, allows this to happen.

The first secret of a good Internet browser is making it possible for the user to navigate the Net without having to know, remember, or write down the lengthy and clumsy addresses and filenames that the Net and UNIX need to operate. The second secret is providing not just links from information source to information source, but links that are contextually related.

The Web does both, and this makes it different from any other browsing technology. Gopher, for example, offers a highly usable system of navigation, but its links are primarily to sites, not to contextually related documents or (as the Web makes possible) specific sections of documents. When you enter a Gopher directory, you see a wide range of possibly important information, but you can spend considerable time searching for exactly the document—and exactly the section of the document—you need. A well-constructed Web-based hypertext document can make all of this seamless, although it must be noted that most Web documents remain far from this ideal.

Through the use of hypertext, the Web can provide access to mountains of information in a very usable way. The primary reason, quite simply, is that the information (or, rather, the links to the information) is provided in a manner with which readers of the language are familiar.

Tables of contents, headings, paragraphs, lists, and graphic elements make up the pages of books, magazines, and newspapers, and these are the essential elements in an HTML (World Wide Web) page. Gopher's limitation is that it is exclusively list-oriented, while FTP's limitation is that it provides not just lists, but lists of obscure filenames.

Both seem computer-ish, and since the release of the Macintosh, "computer-ish" is something computers aren't supposed to be. The Web provides a booklike layer on top of the Net, albeit a book with the less-linear capabilities that hypertext and other computer-ish systems offer, and books with their printed pages remain the most efficient and perhaps the most usable information-presentation system we have in place.

A half-millennium of the printed page is not about to be outdone by 15 years of the scrolling screen, and that's what makes the Web so instantly usable. Its usability will only be enhanced, although its efficiency might not be, as it moves toward integrating the multiple media of print with the multiple media of film and television.

History of the Web

The World Wide Web dates back to March 1989. In that month, Tim Berners-Lee of Geneva's European Particle Physics Laboratory (which is abbreviated as CERN, based on the laboratory's French name) circulated a proposal to develop a "hypertext system" for the purpose of enabling efficient and easy information-sharing among geographically separated teams of researchers in the High Energy Physics community.

The three important components of the proposed system were the following:

- A consistent user interface.
- The ability to incorporate a wide range of technologies and document types.
- Its "universal readership"; that is, anyone sitting anywhere on the network, on a wide variety of different computers, could read the same document as anyone else, and could do so easily.

More than a year later, in October 1990, the project was presented anew, and two months later the World Wide Web project began to take shape. Work began on the first line browser (called WWW), and by the end of 1990 this browser and a browser for the NeXTStep operating system were well on the way. The major principles of hypertext access and the reading of different document types had already been implemented.

In March 1991, two years after the presentation of the original proposal, the WWW line-mode browser saw its first limited network use. Two months later, WWW was made available more extensively at CERN, and the Web was effectively off and running. That summer saw seminars about the Web, and announcements were posted to relevant newsgroups. October 1991 brought the installation of the gateway for WAIS searches (a crucial development for the Web's future as a search as well as a browsing tool), and shortly before the end of 1991 CERN announced the Web to the High Energy Physics community in general.

Essentially, 1992 was a developmental year. The WWW browser was made available via FTP from CERN, and the Web team presented the Web to a variety of organizations and audiences, but it was the software-development efforts of that year that would make it a vitally important time. In January 1993, 50 Web servers were in existence, and at that time the Viola browser was made available for the X Window system. Viola was the early leader in Web browsing technology, offering the first glimpse of the graphical, mouse-based hypertext system originally conceived by the Web proposal.

The Web was on its way. But two other browsers saw daylight at the beginning of 1993, and these proved the most important. CERN's Macintosh browser brought the Mac into the WWW game, and at the same time the Internet community saw its first glimpse of Mosaic. In February 1993 the first alpha version of X Mosaic (Mosaic for X Window) was released by NCSA (the National Center for Supercomputing Applications in Champaign, Illinois), developed by Marc Andreesen, whose name ranks behind only Berners-Lee's in media popularity surrounding the Web.

In March of 1993, WWW traffic clocked in at 0.1 percent of total Internet backbone traffic. Six months later, the Web began to demonstrate its potential by expanding to a full one percent of backbone traffic. That tenfold increase became practically the norm for Web access increases, continuing into 1994.

The same tenfold increase was evident in the number of Web servers, which by October 1993 had increased to approximately 500. By the end of 1993, the Web project was beginning to receive technical awards, and articles on the Web and Mosaic (the two were already becoming inextricable) began to appear in publications as prestigious as *The Guardian* and *The New York Times*. By early 1994, in fact, the Web/Mosaic combination had begun to attract the sort of media hype that can both make and break a technology. Ninteen ninety-three also saw the release of Cello, an alternative browser developed by the Legal Information Institute at Cornell University, for users of Microsoft Windows.

Several important developments came in 1994. First, work expanded on the development of "secure" Web access, the kind of security needed if real corporate work were to take place across the

Web, and if users were ever to provide such details as credit card information.

Second, the licensing of Mosaic to commercial developers took hold, and even less-known browsers such as Cello were seeing licensing potential. NCSA's development of Mosaic took a turn with the departure of Andreesen and others to form the Mosaic Communication Corporation (now Netscape Communications Corporation), and the first international World Wide Web conference took place in Geneva.

In July 1994, CERN began to turn over the Web project to a new group called the W3 Organization, a joint venture between CERN and MIT (the Massachusetts Institute of Technology), to develop the Web further. The transition had several purposes, but primary among them was that the project had outgrown—by a long shot—the ability of CERN to deal with it. The Web was obviously becoming the heart of the information-providing function of the Internet, and the responsibility for its development and growth required more resources (both financial and human) than one research laboratory could muster.

Over the course of a few months in 1994 and early 1995, this development venture was transformed into a collection of organizations named The World Wide Web Consortium. Led by Web founder Tim Berners-Lee, the Consortium operates with funding from memberships: Full Members pay $150,000, while Affiliate Members pay a tenth that amount to join. In April 1995, MIT was joined by the French National Institute for Research in Computer Science and Control (INRIA) as co-host of the Consortium. CERN remains an important collaborator.

Accessing the Consortium's Web site (`http://www.w3.org/`) lets you see the organization's official statements.

How the Web Works: HTTP

The most interesting part of the way the Web works is its simplicity. Of course, that might be why it's as powerful as it is. You'd expect a technology like this to have the complexity commensurate with its capabilities, but it doesn't. In fact, as the Web document

prepared by CERN (`http://info.cern.ch/hypertext/WWW/Protocols/HTTP/HTTP2.html`) tells us, the transaction takes place in four basic phases, all part of the underlying HTTP (HyperText Transfer Protocol):

- Connection
- Request
- Response
- Close

In the connection phase, the Web client (for example, Mosaic, Netscape, Lynx) attempts to connect with the server. This appears on the status line of most browsers in the form `Connecting to HTTP server`. If the client can't perform the connection, nothing further happens. Usually, in fact, the connection attempt times out, yielding an explanatory message saying so.

Once the connection to the HTTP server is established, the client sends a request to the server. The request specifies which protocol is being used (including which version of HTTP, if applicable), and it tells the server what object it's looking for and how it wants the server to respond. The protocol can be HTTP, but it can also be FTP, NNTP (Network News Transfer Protocol), Gopher, or WAIS (the Z39.50 protocol). Included in the request is the *method*, which essentially is the client's command to the server. The most common method is *GET*, which is basically a request to retrieve the object in question.

Assuming the server can fulfill the request (it sends error messages if it can't), it then executes the response. You'll see this phase of the transaction in your browser's status line, usually in the form `Reading Response`. Like the request, the response indicates the protocol being used, and it also offers a *reason line*, which appears on the browser's status line. Depending on your browser, you'll see exactly what is going on at this point, usually represented by a `Transferring` message.

Finally, the connection is closed.

At this stage, the browser springs into action again. Effectively, it loads and displays the requested data, saves the data to a file, or launches a viewer. If the object is a text file, the browser will display it as a nonhypertext ASCII document. If it's a graphic image (such as a GIF file), the browser will launch the graphics

viewer specified in its configuration settings. If it's a sound or video file (AU, WAV, MPEG, or other), the browser will launch a similarly configured player. Depending on the type of method specified in the request, the browser might also display a search dialog.

Usually, however, the browser displays an HTML (HyperText Markup Language) document. These documents show the graphics, links, icons, and formatting for which the Web has become so famous.

How the Web Works: HTML

HTML is a simplified derivative of SGML, or Standard Generalized Markup Language, which is a code used to make documents readable across a variety of platforms and software. Like SGML, HTML operates through a series of codes placed within an ASCII (that is, text) document. These codes are translated by a World Wide Web client, such as Lynx, Mosaic, Cello, Viola, or MacWeb, into specific kinds of formats to be displayed on the screen, and on which the user can (in some cases) act.

These items include links, lists, headings, titles, images, forms, and maps. As you might expect, the longer HTML stays around, the more complex it is becoming. The original HTML allowed only text, and later, inline images (graphics that appear on the document) and various types of lists and link types were added, but not until HTML+ were such elements as fill-in forms and clickable maps possible. Not surprisingly, HTML 2.0 promises even more variety, to the extent that HTML might well possess enough features to make serious documentation design possible.

The documents you see on your World Wide Web browser are usually HTML documents. True, the Web can display ASCII files, but they're just plain text files that can be downloaded and opened in any text editor. What makes an HTML file worthwhile is the browser's interpretation of its formatting codes—a link appears as a highlighted item, a list appears with associated bullets or numbers, and a graphic appears as the picture it represents. In other words, the World Wide Web would be nothing without HTML.

But HTML is limited—some would say extremely so. Even with HTML+, for example, it's barely possible to place graphics where you want them, and simple items like font selection are constrained as well. Nothing in HTML even approximates the sophistication of the desktop publishing capabilities of today's word processors, and it's a long, long way from offering the design tools of a desktop publishing package such as PageMaker or QuarkXPress. The Web in its current state is still well short of the interest of professional page designers, and as a result many of the pages we see are amateurish, garish, or just downright ugly.

Accessing the Web

The World Wide Web can be accessed through both direct and indirect Internet connections, and through a variety of clients (browsers). In the following sections, I simply outline the possibilities in a brief explanation of the issues you'll need to consider about Web access.

Indirect and Direct Internet Connections

There are two main types of Internet connection: *indirect* and *direct*. Both types can make use of either modems or existing network cards, and both types range in price from free to very expensive. There are also other ways of describing Net connections (Internet books differ widely on access descriptions), but these two are as effective as any.

The crucial difference between indirect and direct connections is this: With a *direct connection*, your computer is an individual node on the Internet (or, in some cases, a simulated node). With an *indirect connection*, your computer is simply a terminal on a computer or on a network that is itself an individual node on the Internet.

With a direct connection, your computer has its own IP and can be established as a server for FTP, Gopher, News, or the World Wide Web. In turn, you can use software to bring mail and software directly to your computer. Direct access is often necessary if you want to use programs such as Mosaic for Windows or

Netscape for Macintosh, as well as the other graphical software available for these machines. It is possible to access this software through some other connection tools, such as PC packages that connect to X Window servers, but for many users direct access is the only means available.

With an indirect connection, by contrast, you are given disk space and access time on another computer. When you receive mail, the mail stays on that server, and when you transfer files they are stored on that server as well. (You can download this information to your own computer through a variety of means, but that's a separate activity entirely.) With an indirect connection you can't normally use graphical software such as a Web browser, and instead you must rely on the text-based browsers that your server can run.

Uses of the Web

The Web can be used for multiple purposes. The following sections provide a brief overview of the Web's offerings—from disseminating research and information to providing customer support.

Graphical Design of Information

For a long time, book publishers have known the importance of graphical design. So have computer users—as anyone with a word processor and a set of fonts is well aware. Over networks, however, information has been presented largely as unformatted ASCII, primarily because there were few choices. (ASCII has been an extremely valuable "lowest common denominator," but it is limited.) Exceptions have existed on the Mac, of course, which has had built-in networking since its inception, and more recently on platforms such as NeXTStep, OS/2, and Windows. But over the Internet and other wide area networks, text has been the dominant mode of presentation.

The Web changes that. At least, it changes it if you consider a graphical browser as a default, which is clearly what's happening. Suddenly, information at remote sites can be presented in graphical format, complete with font choices and incorporated drawings, photographs, and other multimedia elements.

The results might have their downside—along the lines of trivial, unnecessary information presented solely because it's possible—but the plus side of the ledger is far more likely. Graphical elements offer different kinds of information, and information providers are researching precisely what that means. We are beginning to see strong uses of charts, diagrams, illustrations, tables, graphics, photographs, maps, flowcharts, and all other kinds of graphical representations as the Web's capabilities increase, and this can only mean an increase in the comprehensibility of the information. Of course, it all has to be done right, but that's another issue. The fact that it's possible means that those who care about their information will figure out how to do it.

This doesn't mean that HTML in its current incarnation allows anything like full graphic design. But as HTML 3.0 moves into full acceptance, and as Web clients begin to display fully formatted word processing and desktop publishing files, it almost undoubtedly will. At that point, we should begin to see exceptionally strong designs.

Dissemination of Research

Dissemination of research was, of course, one of the original purposes of the Internet, and more particularly of the Web project at CERN. Today, the Web is being used for this purpose to a certain degree, but perhaps more importantly—for the sake of its mass acceptance, at least—it's being used to make research findings available to the general public. The sheer amount of research available through diligent Web searching is staggering, and much of it is presented so that it's as easily understandable as possible.

This is an important development. As more publicly funded research agencies are called upon to account for their expenditures and activities, they are being forced to come up with increasingly creative ways of making their work known to the public. But booklets and pamphlets distributed through direct mailings are expensive and usually ignored, so getting the word out is difficult.

What better way than the Web? Through a well-designed HTML page, an organization can now demonstrate its activities graphically and comprehensibly, and these pages can be updated inexpensively and frequently as a means of continuing to foster

public interest. Organizations like NASA are making extensive use of this kind of public dissemination, and we can expect others to do so as well. Among other things, it's a way of making research timely, enjoyable, and interactive.

Browsing and Ordering of Products

We're already beginning to see product ordering available through the Web, even though discussions continue as to its security for such activities as credit card use. In the near future, "secure" Mosaic will find a variety of releases, and when that happens, expect to see a flurry of Web shopping centers opening. Until then, you can find a considerable variety of products to order on the Web, ranging from flowers to books to music CDs.

What's the appeal? Very simply, this is home shopping at its most interactive. Unlike home-shopping TV stations, you don't have to sit through 15 descriptions of cubic zirconium rings and bracelets in order to find that elusive Wayne Gretzky undershirt you've been looking for. Shopping on the Web is more like walking into a shopping mall, and in fact *mall* is the name given to many current Web offerings. Just click on the shop you want, turn on the inline graphics to see a picture of the product you're looking for, and then go to the order forms page to do the actual ordering.

Client and Customer Support

The World Wide Web's potential for client and customer support is extremely strong. Already, companies like U.S. Robotics and Digital Equipment Corporation are using the Web to make available to their customers such items as technical documents, software patches, and the answers to frequently asked questions. The benefits of this approach are obvious. Customers with Web access can take care of their own information needs, resulting in less strain on the supplier's support staff and, quite likely, an improved perception of customer service on the customer's part.

The only danger to this approach is the possibility that the Web will be used as a substitution for person-to-person support. But that's not a danger at all if the Web site offers everything the customer needs, and in many cases that might well be true.

Consider, for example, the possibility of Web-based tutorials offering step-by-step installation procedures for a new piece of equipment, or for that matter how to program your VCR. If it's well designed, it will be better than a tech support phone call because it shows, rather than tells, the customer what to do.

Of course, HTML forms can also be used to provide feedback and questions on products, and these can be posted as well. The idea is to have a place where customers can feel they haven't been forgotten, and where they can learn from the experiences of other customers as well. That's what we're starting to see.

Display of Creative Arts

For some reason, people in the creative arts are often perceived as traditionalists, stodgy and resistant to new technologies. Yes, there are some of those. But throughout history artists have been among the first to adopt new technologies to their own purposes, as witnessed by everything from the printing press to MIDI. And there's every indication that the artistic community is seeing the World Wide Web as yet another medium that it can exploit in order to present its work and link up with other artists.

Already we have online galleries featuring new visual art, collaborative artistic efforts of a kind not previously possible, and presentations of artwork that outsiders are asked to evaluate. Examples of creative writing are springing up all over the Web, including some interactive stories and illustrated texts as well. There are even some preliminary attempts at Web-based drama.

The Web offers artists a couple of very important features. First, it allows an inexpensive way of mounting work. As long as the site is in place, the rest is up to the artist, in a way that differs considerably from standard galleries or street corners. Second, everyone posting art on the Web has a built-in global audience, and that's something about which artists can usually only dream. Obviously, there are media that will never be entirely suited to Web presentation, but if today's efforts are any indication the Web, all by itself, could lead to a kind of renaissance in both the amount of artwork publicly available and the ability of a mass audience to access and appreciate it.

The Future of the Web

For any technology, it's impossible to predict the future. No sooner are the predictions made than the technology develops unexpected adherents and unforeseen uses. This was the case with gunpowder, with television, with computers, and now with multimedia, online services, and the Internet itself. But trends count for something, and the Web has revealed nothing if not a series of trends toward future use. Here are some, presented as ideas to be explored.

- **Full-Scale Publishing**

 A wide range of publishers has already appeared on the Web. Some have presented samples of publications; others have presented full texts. In the future, there's every reason to expect full publishing efforts on the Web, everything ranging from children's books through advertising-laden magazines.

- **Voting**

 Well, why not? With fill-in forms establishing themselves as perhaps the most important single advance in Internet-based technology, and with the White House and other governments turning to the Net for information dissemination of a variety of kinds, it seems only a matter of time until the Web can be used for voting—maybe not in a presidential election, at least for a while, but certainly for other purposes. If the idea is to get more people voting on public issues, why not use all public media?

- **Live Interactive Entertainment**

 Yes, we have television. But television is presentation only, not interaction, and here the Web can make a difference. Why not comedy routines in which Web users participate in skits and jokes? Why not dramatic pieces in which Web users influence the outcome? How about real-time role-playing games?

- **News**

 The problem with CNN or any other continual news supply is that the news we get is the news they decide we'll get. Here the Web's possibilities are enormous. How about fully customizable news packages, so that if we want to focus on

Rwanda, or the Middle East, or a flood or earthquake area, or for that matter the qualifying games among African teams for the 1998 World Cup, we can get the text, audio, and video of whatever subject we want.

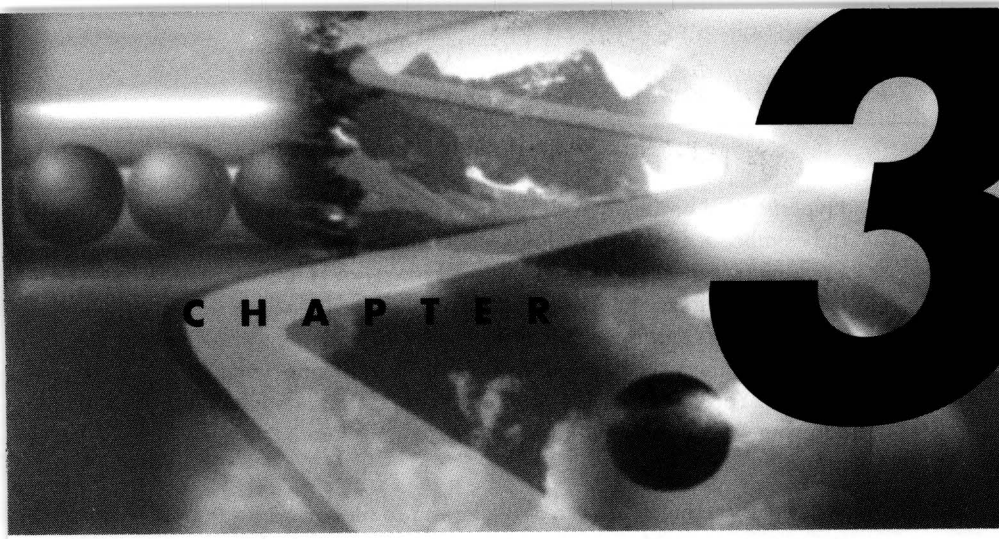
- **Distance Education**

 Obvious, maybe, but no less important for being so. For decades, universities and colleges have been looking for ways of offering courses to students who don't have access to the campus (usually because of physical distance). The Web is beginning to see activity in this regard, and this activity will increase dramatically over the next few years. Watch for full university-level courses to be offered over the Web to all registered students (and perhaps others as well), complete with real-time seminars and exams, and professors' visiting hours.

- **Distance Presentations**

 Organizations with high-speed Internet connections might well consider offering multimedia presentations over the Web. These need not be real-time presentations—which eliminates some of the problems presented by desktop conferencing—and they offer the benefit of eliminating travel and accommodation costs, as well as downtime costs, for presentation attendees. Presentations can take full advantage of the Web's multimedia and networking capabilities, and the HTML pages can be quickly redesigned and updated as a result of the presentation. Another benefit is that the presentation can offer links to other information sources, all of which will be updated by the site being linked. The presentation will thus be always up-to-date.

There are other applications: scheduling, interpersonal communication, meetings and conferences, you name it. But the Web is far from the only technology whose future points toward these possibilities, and it remains to be seen if it will overtake, fall behind, or simply incorporate all the rest. What's certain is that the Web is extremely flexible, and that its capabilities haven't begun to be explored.



By Wes Tatters

Spry Mosaic

The tool used to access the World Wide Web, or more correctly, the Internet, is called a *browser.* This name stems from the way you can easily browse through many of the documents, files, and services provided by many different types of servers all over the Internet.

In this sense, a Web browser can best be thought of as an Internet client program for all occasions. Built into most browsers is the capability to communicate with FTP servers, Usenet newsgroup servers, and even WAIS or Gopher servers, and, more importantly, you access all these servers using the same familiar interface. If this was all that the World Wide Web was capable of, it would already be a valuable tool to many people. However, with the addition of its own special type of server, the World Wide Web truly is *the* Internet navigator.

Hypertext

To assist you as you explore the World Wide Web, its developers adopted the now-popular hypertext system as the basis for its navigation environment.

Hypertext is a process that allows special connections or hotlinks to be embedded in the text displayed on the browser's screen. Clicking on one of these links tells the browser to automatically load the document the link points to. With these links, you can very easily move from document to document without ever needing to know the physical name of the document or even its location. You simply click on a word that reads `stocks` or `bobsled` and your WWW browser knows where to go to locate this new information.

What's more, these links can also take you to files on FTP sites, newsgroups, and other services offered anywhere on the Internet.

URLs

To make such a system a reality, a new type of addressing system needed to be developed that could describe not only the location of a file or server, but its type. The World Wide Web uses an addressing system known as a Uniform Resource Locator (URL) to achieve this.

A URL consists of four separate parts that, when combined, completely define the location of any file or service located anywhere on the Internet. These parts are the protocol, domain name, path, and filename. A completed URL will usually look something like this: `http://home.mcom.com/home/internet-search.html`.

The Protocol

The most important part of any URL is the protocol definition. This piece of information defines the type of server the selected link points to. Without this information, the WWW browser doesn't know which port and server it needs to talk to in order to obtain the information pointed to by the selected hotlink. The main protocols are listed in Table 3.1.

Table 3.1. URL protocols.

Protocol	*Service*
`file:`	In addition to referencing information located on the Internet, most WWW browsers can also access files stored on your local hard drive. If `file:` is followed by a `///C¦`, this indicates that the URL points to a file on your local C: drive. Otherwise it performs the same function as the `ftp:` protocol.
`ftp:`	If the nominated link points to a file stored on an anonymous FTP server, the URL must begin with this definition.
`http:`	All HTML documents are usually stored on a WWW server. HTTP (hypertext transfer protocol) refers to the protocol used by these servers.
`gopher:`	All WWW browsers can also navigate their way around a Gopher server by using this protocol definition.
`mailto:`	This is a special type of URL that lets you send an e-mail message.
`news:`	Links that point to Usenet newsgroups must be declared using this protocol.
`telnet:`	To indicate that a link needs to open a telnet session, the URL begins with `telnet:`. Most WWW browsers can't open a telnet session themselves. Instead, they will usually launch a separate telnet client when such links are selected.
`wais:`	In theory, all WWW browsers can access WAIS servers, but most users prefer to use WAIS gateways such as WAISgate instead.

Domain Name

Following the protocol definition, the next item of information to be defined by a URL is the location of the server housing the file or information pointed to by the hotlink.

Like all other Internet services, this can be done by using either the domain name of the server or its corresponding IP address. However, the use of IP addresses is frowned upon by most of the WWW community because it does not describe the name of the site that the URL refers to in an easily understandable form.

When the protocol definition and the domain name are combined using the `//` symbol, the result is a URL definition that accurately indicates the location and type of server. In addition, due to the nature of the World Wide Web, in most cases you can access a server's home page or root directory by using just these two pieces of information.

For example, the following URL takes you straight to the home page of the U.S. Robotics RoboWeb WWW server without the need for either a path or filename: `http://www.usr.com/`.

Path and Filename

The last two components of a URL may or may not exist, depending on the location and type of information any given hotlink points to. In most cases, however, you will find that both a path and a filename are listed as a part of the URL.

When describing the path to a file, a URL uses the standard UNIX method for path definitions, separating each directory by a forward slash (/). Windows users should be careful not to fall into the trap of using the DOS backslash (\), because most WWW browsers will fail to understand what you have entered.

Relative Addressing

A special type of URL does not contain a domain name, but may still contain a path and filename.

This type of URL is referred to as a *relative* address. Instead of supplying a full domain name and path itself, this type of URL adopts the domain name and path of the last URL that the server accessed and looks for the specified file based on this information.

Many WWW servers use this type of addressing to move between pages because it makes for considerably easier site maintenance, especially if a group of pages needs to be relocated to a different server or directory.

WWW Servers

To manage all these hypertext documents, a new type of server and a corresponding communications protocol were developed.

The protocol, known as the *Hypertext Transport Protocol* (HTTP), lets WWW browsers communicate with special WWW servers that contain collections of hypertext documents called *HTML pages*. These pages contain the information and links displayed by the WWW browser. There are now thousands of WWW servers in operation all over the world, joined together by the many hotlinks in the over four million HTML pages that provide information as diverse as the Internet itself.

Although HTTP began life as a relatively simple communications protocol, recent developments have seen the addition of new capabilities, including secure transaction layers, firewalls, and proxy servers. All of these enhance the capabilities provided by the World Wide Web. Luckily, there is little need for you to learn about any of the capabilities in order to take advantage of the World Wide Web. For those of you who would like to know more, the best place to start is the HTTP information pages compiled by the W3 consortium at `http://www.w3.org/hypertext/WWW/Protocols/Overview.html`.

Spry Mosaic

Recently, CompuServe acquired a company called Spry, whose products (including Internet in a Box and Mosaic in a Box) were well known and acclaimed for performance and reliability. With your Sportster, U.S. Robotics has added a copy of Spry Mosaic to

help you get started with your first World Wide Web session. Provided that you have set up your account correctly, installed Mosaic, and opened a TCP/IP connection with your Internet software, you should now be ready to click on the Mosaic icon and get started.

The Main Window

You are now on the World Wide Web. At this stage you can begin to explore it to your heart's content, but before you get too carried away, let's take a look at some of the features Spry Mosaic provides.

The Spry Mosaic window is broken into three main sections:

- The document area
- The control console
- The status bar

The Document Area

The most important part of any WWW browser is the *document area* where WWW pages are displayed. With Spry Mosaic, as with most WWW browsers, the middle section of the screen is devoted to displaying WWW pages as they are retrieved from the Internet.

In addition, you'll often find that the information contained on a WWW page is larger than the space provided by the WWW browser. To read this information, use the scroll bars at the top and sides of the document area.

Hotlinks

The first thing you need to know when working with any WWW browser is how to recognize a *hotlink*. In Spry Mosaic all hotlinks are defined as blue text and, optionally, are further enhanced by an underline. In addition, any graphics that have hotlinks associated with them are highlighted by a blue border.

When you click on any of these hotlinks, Spry Mosaic opens a copy of the document that the link points to and displays it on the screen in place of the current page.

The Control Console

The area at the top of the Spry Mosaic window, above the page display window, is referred to as the *control console.* You can easily navigate your way around the World Wide Web by using the various tools provided in this area.

The Menu Bar

Like all Windows-based programs, Spry Mosaic has a *menu bar* across the top of the main window. To access the options provided by this menu bar, click the various menu pad options listed. When you do this, a pull-down menu appears displaying the options available:

File	The File menu contains functions that allow you to open new documents located on either your hard drive or any of the WWW servers. In addition, you can also print copies of the page you are currently viewing or display the Hotlist window. If you're interested in the workings of HTML, use the option that allows you to display the current document's HTML source.
Edit	The Edit menu lets you copy URLs displayed on the document line or open the find requester.
Options	From this menu you can select any of the options that allow you to tailor the way Spry Mosaic looks and operates.
Navigate	Except for one, all the function lists on this menu are duplicated in the toolbar discussed later in this chapter. The only one that is not, the **H**istory item, opens a window listing all the WWW pages you have visited during your current session.
Personal Favorites	The Add button on the toolbar allows you to add pages to your list of personal favorites. Once added, all these pages are listed on this menu so that you can easily return to them whenever you want.

	When you select a page listed on this menu, Spry Mosaic opens it as though you had selected it by clicking on a hotlink in a WWW page.
GNN	Any of the hotlist sections installed by NetLauncher when Spry Mosaic was added to your hard drive can be placed on the menu bar to allow easy access to the sites they contain. GNN is one of these hotlists.
Help	This menu gives you access to the Spry Mosaic online help system and also allows you to send e-mail to the developers at Spry.

The Toolbar

The toolbar displayed below the menu bar gives you access to many of Spry Mosaic's features. (See figure 3.1.) By default, the toolbar contains both a graphical and text description of its purpose. As you become more familiar with the use of Spry Mosaic, you will probably want to adjust the settings so that only the graphical elements are displayed. (See figure 3.2.) By doing this, you increase the amount of space available in the Spry Mosaic window for displaying WWW pages.

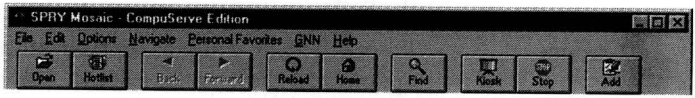


Figure 3.1. *The Spry Mosaic toolbar.*



Figure 3.2. *With the text turned off, the toolbar is considerably smaller.*

Here are the toolbar items:

Open	This icon opens the file requester (see figure 3.3). It lets you load HTML pages stored on your hard drive into Spry Mosaic.

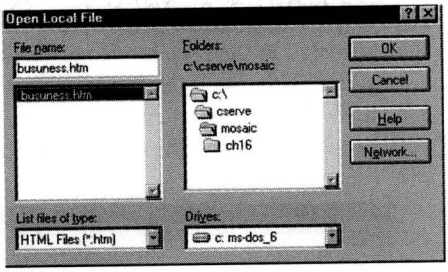


Figure 3.3. *The Open Local File requester lets you open WWW pages stored on your local hard drive.*

> **Note**
>
> Although documents stored on a WWW server are all given an `.html` extension, due to the limitations imposed by MS-DOS, all HTML documents on your hard drive must have an `.htm` extension.

Hotlist When you install Spry Mosaic, it comes preconfigured with a list of popular WWW sites. These sites are stored in the Spry Mosaic Hotlist. When you click on this icon, the Hotlists window is displayed so that you can select from the numerous sites provided. (See figure 3.4.) The hotlist is broken down into a number of small lists relating to different types of services. To open any of these smaller lists, double-click on the category you are interested in. Doing this expands that section of the list. By clicking on any of the WWW sites described in this area, you can tell Spry Mosaic to open the corresponding page, just as if you had selected it by clicking on a hotlink in a WWW page. You can also tell Spry Mosaic to add any of the sections displayed to the menu bar.

Sections that will be shown in the menu bar have a small M in their section icon. Finally, you can also add new sections and WWW pages, as well as maintain existing ones, by using the buttons provided on the right side of the Hotlists window.

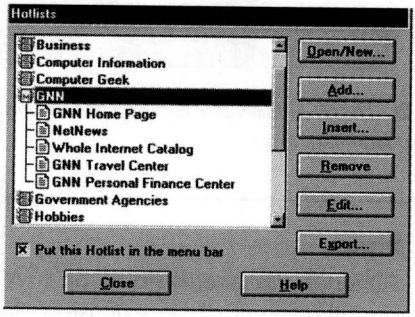


Figure 3.4. *The Hotlists window displays all of the sites stored in Spry Mosaic hotlists.*

Back — As you begin to move around the World Wide Web, Spry Mosaic keeps track of where you have been. If you click on this icon, the previous page is recalled.

Forward — If you've used the Back icon, you can then use the Forward icon to move back up the list to the most current page.

Reload — Clicking on this icon forces Spry Mosaic to reload the current page. If you stopped the retrieval of a large page, for example, you can use this icon to retrieve the missing information.

Home — This icon always returns you to your own home page.

Find — When you open a large WWW page, it is sometimes handy to be able to search quickly through the contents of the page. The Find icon allows you to do just that by opening a small dialog box where you can nominate a word or words you want to be located on the current page. (See figure 3.5.)

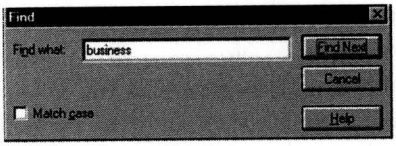


Figure 3.5. *Use the Find dialog box to search rapidly through large WWW pages.*

Kiosk — Selecting this icon places Spry Mosaic in Kiosk mode. (See figure 3.6.) All the toolbars, menus, and other controls are removed from the screen to allow more room for displaying large WWW pages.

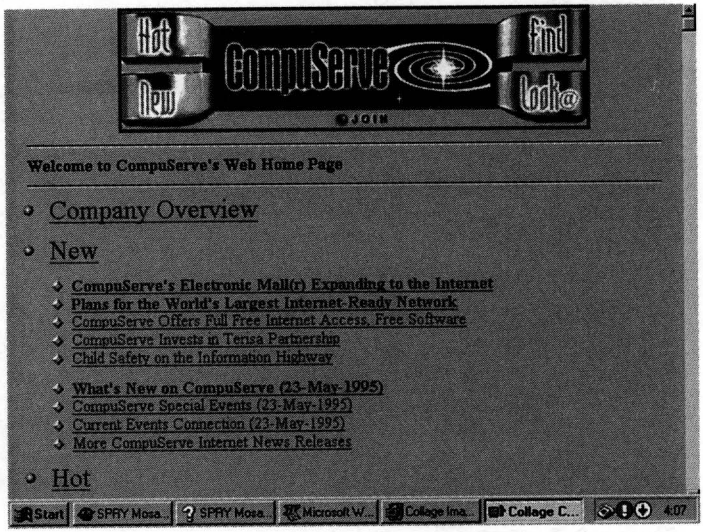


Figure 3.6. *Spry Mosaic in Kiosk mode.*

> **Tip**
> To exit Kiosk mode, hit the Esc key or Ctrl+K.

Stop — If you need to halt the loading of a document, click on this icon.

Add — To add the current page to your list of personal favorites, click on this icon.

Document Title

Immediately below the toolbar is a section displaying the name of the current WWW page. In most cases you will probably want to remove this section from the screen to free up more space for the document display area. (See "Configuring Spry Mosaic" later in this chapter for details.)

If you keep this area active, you can use it to return to any of the pages visited during the current session by clicking on it. Doing this displays a history list similar to the one shown in figure 3.7. You can then select the page you want to recall, and Spry Mosaic locates the page for you.

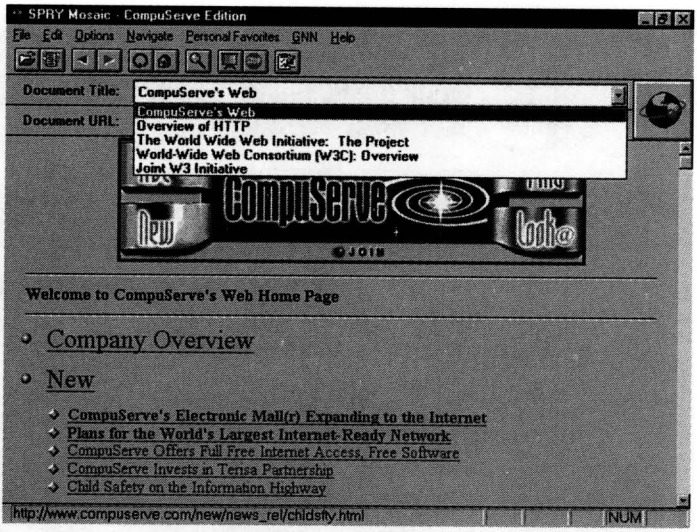


Figure 3.7. *The Document Title field lets you recall a page from a list of pages you have visited during the current session.*

Document URL

Like the Document Title field, this field displays information about the current WWW page. In this case, the information displayed relates to the URL of the current document. This field also allows you to type the URL of a WWW page directly instead of selecting it from a menu, from a hotlist, or through a hotlink.

Doing this allows you to easily open any of the WWW pages listed in this book. For example, enter the following HTTP address into the document URL field: `http://www.webcom.com/~taketwo/sams.html`.

Did you receive the special message left for you?

> **Note**
> By clicking on the drop-down arrow to the right of this field, you can call up a history list similar to the one provided by the Document Title field. This time you received a list of URLs instead of document names.

Logo Animation

Apart from giving you something to look at, the animated logo to the right of the Document Title and Document URL fields is there to let you know when Spry Mosaic is retrieving a WWW page. If the animation is spinning, Spry Mosaic is busy. If it is static, no pages are currently being retrieved.

Status Bar

The last area of the Spry Mosaic window is the status bar. It is located below the main document display window. This area displays a variety of information depending on what the browser is doing. When you place your mouse pointer over a hotlink, the URL of the page or server that it points to is displayed in the status area on the left side of the status bar. Alternately, when a new page is being loaded, a counter is displayed in this area to indicate the page size and the number of characters already retrieved. The same thing also happens when inline graphics are being loaded.

On the right side of the status bar are five boxes. The first box displays a `DISK` message whenever the Load to Disk option is active. The next box displays a `BUSY` message whenever a page load is in progress. The last three indicate when the Caps Lock, Num Lock, or Scroll Lock keys are active.

> **Note**
> Like many of the elements already discussed, the status bar can be turned off to allow more room for displaying WWW pages.

Configuring Spry Mosaic

The **O**ptions menu (figure 3.8) contains several functions that allow you to tailor the appearance and operation of Spry Mosaic. This section examines each of these options and discusses their use.

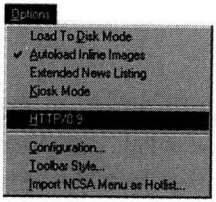


Figure 3.8. *The Spry Mosaic Options menu.*

Load to Disk Mode

To choose this option, simply select it from the Options menu. A tick is placed beside this option on the menu to indicate that it is active.

Once activated, whenever you attempt to open a new document, a save file requester is displayed so that you can specify a name for the file. After you specify a name, the document is saved directly to your hard disk. The most popular use for this option is to save a page that you may want to study more closely once you disconnect from the Internet.

> **Note**
> When Load to Disk mode is active, none of the documents you select are displayed on the screen; they are only saved to your hard disk.

To save a page, activate the Load to **D**isk Mode option and click on the Reload icon. Enter a name for the new file in the save file requester and click on the OK button. Now deactivate the Load to **D**isk Mode option by again selecting it from the **O**ptions menu. After you disconnect from CompuServe, you can reload the document into Mosaic by clicking on the Load icon.

> **Tip**
> You can also selectively activate the Load to Disk option by holding down the Shift key when you click on a hotlink. This will save the new WWW page to your hard disk instead of displaying it on your screen.

Autoload Inline Images

When a WWW page is displayed, you will probably notice that the text of the document is displayed first and then any images associated with the page are loaded.

When you turn off the **A**utoload Inline Images option, Spry Mosaic loads only the text of the document and inserts placeholders where all the images are meant to go. (See figure 3.9.) The main advantage of doing this is that loading the same document with all the images included can take 1.5 to 3 minutes using a 28.8 bps modem (figure 3.10), while loading it with placeholders takes only a matter of seconds. When you consider that some pages may take up to 10 minutes to load with slower modems, deselecting this option makes a lot of sense.

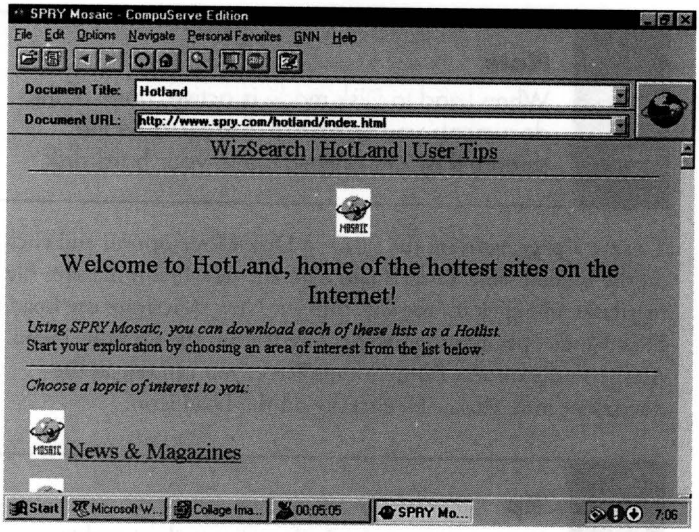


Figure 3.9. *The Spry HotLand page takes about 15 seconds to load with Autoload Inline Images turned off.*



Figure 3.10. *With Autoload Inline Images turned on, the same page can take 1.5 to 3 minutes to load.*

Extended News Listing

One of the more advanced features of Spry Mosaic allows you to read articles in Usenet newsgroups. When this option is turned on, both the name of the newsgroup and a short description of its contents are displayed. If this option is turned off, only the name of the newsgroup is displayed. For more information on reading newsgroups with Spry Mosaic, see "Advanced Capabilities" at the end of this chapter.

Kiosk Mode

This option performs the same action as the Kiosk icon discussed in the toolbar section. All the control panel information is removed from the screen to allow more of the current page to be displayed.

Once in Kiosk mode, you need to press the Esc key or Ctrl+K to return the display to normal.

HTTP/0.9

This option is rarely needed these days because very few version 1.0 HTTP servers still exist. For the most part, leave this option turned off.

Configuration

The most important function on the **O**ptions menu is the **C**onfiguration option. When you select this menu item, Spry Mosaic opens the Configuration dialog box, shown in figure 3.11.

To help you understand the options available in this dialog box, Table 3.2 lists each function and gives a short description of its purpose.

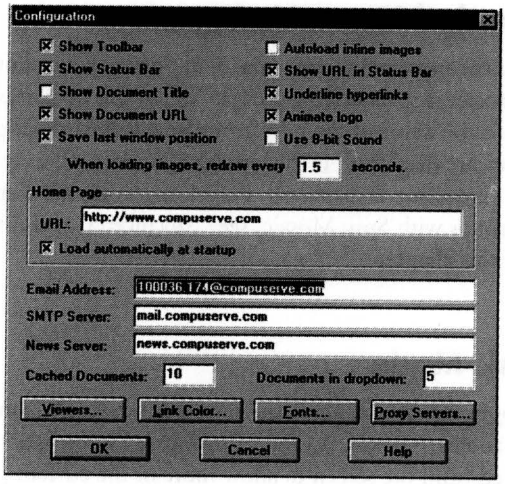


Figure 3.11. *The Spry Mosaic Configuration dialog box.*

Table 3.2. Spry Mosaic configuration options.

Option	*Function*
Show Toolbar	If this function is selected, the toolbar is displayed. Otherwise it is turned off.
Show Status Bar	The status bar is displayed when this option is turned on.
Show Document Title	Turn this option off to remove the Document Title field from the screen.
Show Document URL	This option displays or hides the Document URL Field.
Save last window position	When this option is selected, Spry Mosaic records its location on the Windows desktop and restores itself to that position the next time you use it.
Autoload inline images	This option duplicates the item in the Options menu.

Option	*Function*
Show URL in Status Bar	If this function is turned off, the URLs of hotlinks under the mouse pointer are not displayed in the status bar.
Underline hyperlinks	With this option selected, all hotlinks are highlighted with an underline. Turn this option off if you don't want the underline to be displayed.
Animate logo	On some machines, the animated logo can decrease the performance of Spry Mosaic during file transfers. If your machine seems to be running slowly, try disabling this field.
Use 8-Bit Sound	If you have a sound card, Spry Mosaic can take advantage of it when playing sounds. However, on some lesser-quality sound cards the sound may be tinny. If this occurs, select this option to force the use of 8-bit sound instead of 16-bit sound.
Redraw Images	For most users this function doesn't affect Spry Mosaic's operation in any way. Leave it at between 1.5 and 5 seconds.
Home Page	When you click on the Home icon, the CompuServe home page is loaded by default. If you want to change this page to one of your own, enter the URL of the alternate page in this field. If you select the Load automatically at startup option, this page is automatically retrieved every time you start Mosaic.

continues

Table 3.2. continued

Option	*Function*
Email Address	When NetLauncher installs Spry Mosaic, your CompuServe e-mail address is inserted into this field.
SMTP Server	To send e-mail messages using the `mailto:` protocol, you need to define an SMTP server. The address of the CompuServe SMTP server is the default.
News Server	To read articles stored in newsgroups, you must define a news server. The address of the CompuServe NNTP server is the default.
Cached Documents	Spry Mosaic keeps a record in a local cache of the last few pages you have loaded. This allows these pages to be reloaded without having to requery the remote server where they are actually located. The number in this field defines how many old pages are cached. If you have a lot of memory you can set this as high as 15 or 20 documents, but as a rule you should leave it at around 10.
Documents in Dropdown	This number determines the number of previous documents listed in the Document Title and Document URL history dropdowns.

There are also four buttons across the bottom of the Configuration dialog box that give you access to other, more technical options. Each of these option is described in Table 3.3. For a full

discussion of the features provided by these buttons, refer to the online help information.

Table 3.3. Configuration buttons.

Button	*Function*
Viewers	If you want to configure any additional viewers for Spry Mosaic, click on this button. ImageView, the graphic display program delivered with NetLauncher, is an example of an external viewer.
Link Color	You can change the color of the hotlinks by opening the color selector provided by this button.
Fonts	This button opens a dialog box that allows you to change the font size and text style that Spry Mosaic uses when displaying WWW pages.
Proxy Servers	At this stage there is no need to configure any Proxy options when you're using NetLauncher and the CompuServe dial-up PPP.

Toolbar Style

The **T**oolbar Style entry on the **O**ptions menu opens the small dialog box shown in figure 3.12. By using this dialog box, you can select a toolbar that displays both picture and text, picture only, or text only.

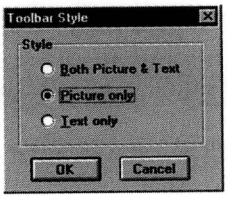


Figure 3.12. *Select the Picture only option to display a more Windows-like toolbar.*

Import NCSA Menu as Hotlist

This last option is of use only to those already using NCSA Mosaic. It allows you to import the contents of a NCSA Quick menu into a Spry Mosaic hotlist.

Advanced Capabilities

Now that you have an understanding of how the World Wide Web and, more specifically, Spry Mosaic works, let's take a look at some of the special features offered by World Wide Web browsers.

mailto

As you begin to explore the World Wide Web, you will occasionally come across a special type of hotlink that looks something like this: `mailto://wtatters@world.net`.

If you select a hotlink like this, Spry Mosaic opens a dialog box similar to the one in figure 3.13. This dialog box allows you to send an e-mail message—usually to the creator of the WWW page or to some other e-mail address nominated by them.

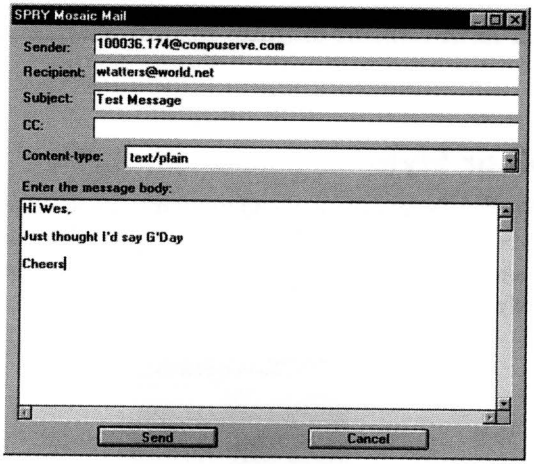


Figure 3.13. *The Message dialog box allows you to send e-mail messages using Spry Mosaic.*

Your CompuServe e-mail address, or any other address that you nominated in the Email Address field of the Configuration dialog, is inserted in the first field of this dialog box. The next field contains the destination address of the e-mail message. The contents of the remaining fields are up to you. Obviously a subject line is important, as is a message in the dialog box's body. In the CC field, you can nominate people to whom you want to send a copy of the message.

When you are happy with the message you have entered, click on the Send button. Spry Mosaic then attempts to transmit the message via e-mail. If it is successful, a small Message Sent dialog box is displayed. Otherwise a message explaining the difficulties appears.

FTP

It is also possible to use Spry Mosaic as an FTP client. Simply enter the domain name of the FTP site you want to visit in the Document URL field. To tell Spry Mosaic that you want to open an FTP session, first type **`ftp://`** and then the domain name.

For example, if you want to visit the Microsoft FTP server, enter the following in the Document URL field and hit the Enter key: **`ftp://ftp.microsoft.com/`**.

After a few seconds you should see a page like the one shown in figure 3.14. All the files and subdirectories in the root directory of the Microsoft server are displayed down the left side of the main document, each represented as a hotlink. All you need to do to enter any of these directories or retrieve any of the files is click on them.

As an experiment, try to locate a subdirectory and file; to help you out, here is the full URL description for the directory you need to locate: `ftp://ftp.microsoft.com/deskapps/word/winword-public/ia`.

As you move down through the various directories, note that the top line of the document area is continually updated to reflect the path to your current location on the FTP server. When you get to the `ia` directory, your screen should look like figure 3.15. The file were looking for is `wordia.exe`. To download this file, click on it.

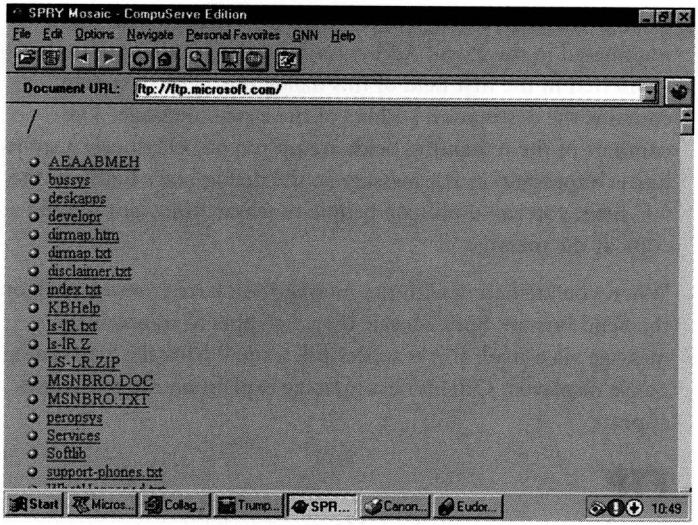


Figure 3.14. *The root directory of the Microsoft FTP server.*

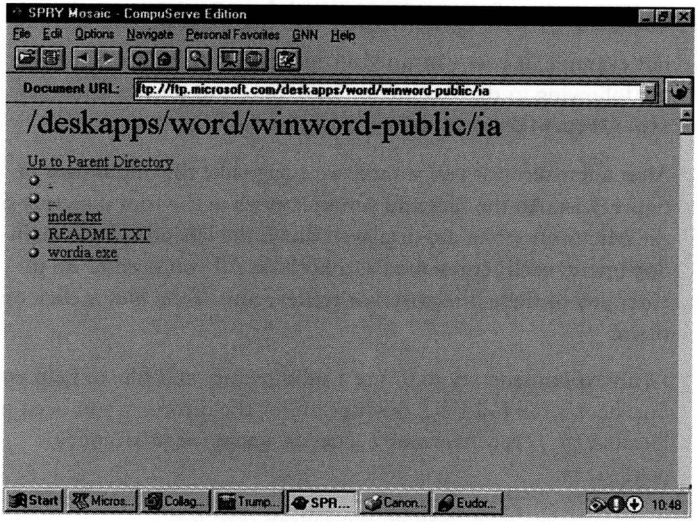


Figure 3.15. *Click on the file* `wordia.exe` *to download a copy of it.*

After a few seconds, Mosaic displays the dialog box shown in figure 3.16. This dialog box tells you that Spry Mosaic is not familiar with the contents of that file and asks if you want to save it to your hard disk. Click on the Yes button if you want to proceed with the download.

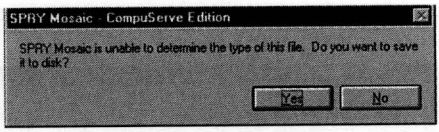


Figure 3.16. *When Spry Mosaic does not recognize the contents of a file, it always asks you what you want to do with it.*

A save requester is then displayed so that you can nominate the directory in which to save the new file. (See figure 3.17.) You can also change the name of the file if it conflicts with one you already have. Click on the OK button to begin the transfer. Spry Mosaic transfers a copy of the file to your hard drive. While the transfer is in progress, Mosaic displays a counter on the status bar indicating how many bytes of data have been received.

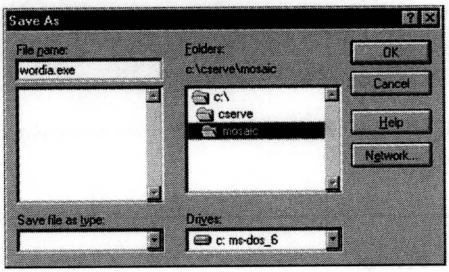


Figure 3.17. *Nominate the directory where you want to save the new file and click on the OK button.*

Newsgroups

The final major specification of the original WWW project was giving the user the ability to read articles stored in newsgroups by using a World Wide Web browser. As a result, this capability is built into Spry Mosaic, provided, of course, that you have access to a news server. To this end, most service providers give access to a news server as part of their service.

There are three ways that you can access a newsgroup using a WWW browser. The first is through a hotlink pointing to a newsgroup as part of a WWW page. Secondly, you can enter the full name of a newsgroup into the Document URL field, preceded by **news:**. For example, to open the newsgroup shown in figure 3.18, you would enter the following URL:

news:comp.infosystems.www.browsers.ms-windows.

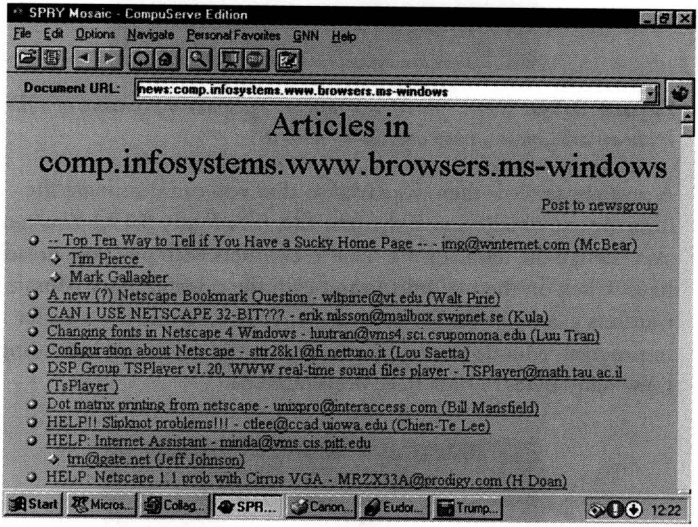


Figure 3.18. *The Windows WWW browsers newsgroup in* `comp.infosystems.www`.

> **Note**
> There is no need to include a `//` after the `BU:` protocol.

To post a new article to this newsgroup, click on the Post To Newsgroup hotlink at the top of the document area, or click on any of the articles listed to read its contents. (See figure 3.19.) Once you have read an article, you can post a follow-up message with the current message automatically quoted for you in the body of the new message, or you can send an e-mail message to the article's author. (See figure 3.20.)

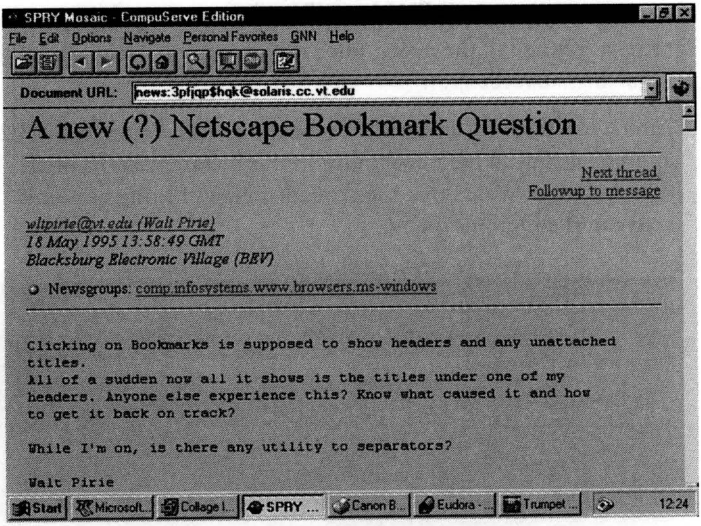


Figure 3.19. *When you select an article, Spry Mosaic displays it for you in the document area.*

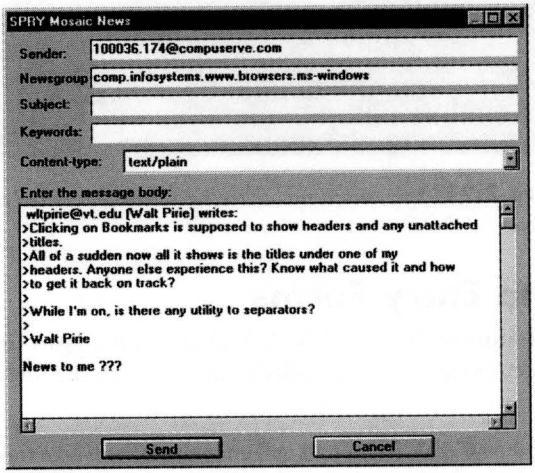


Figure 3.20. *The article you are replying to is automatically quoted at the beginning of the message you want to send.*

If you don't know the names of any newsgroups, you can use Spry Mosaic to display a list of all those available. Type **news:** in the Document URL file, followed either by a single asterisk or the

name of one of the more popular hierarchies. For example, to retrieve a list of all the newsgroups in the comp hierarchy, type the following: **news:comp.***.

After a few seconds, a page similar to the one shown in figure 3.21 appears, listing all the newsgroups in this hierarchy and a brief description, provided that the Extended News Listing option is active in the Options menu.

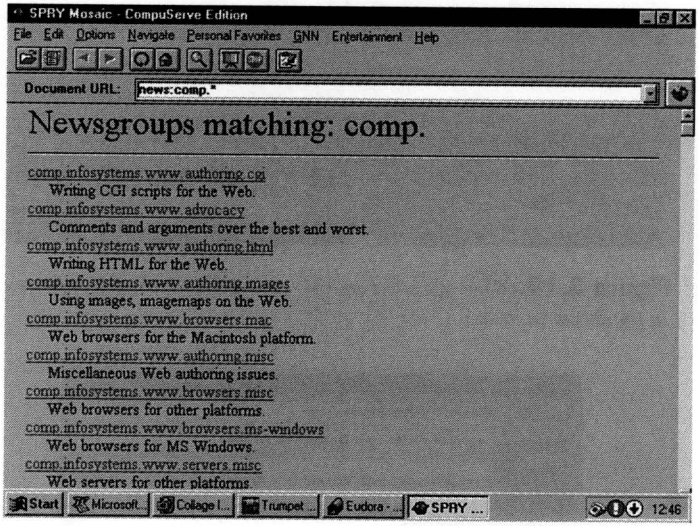


Figure 3.21. *Spry Mosaic lists all the active newsgroups and a brief description of their contents.*

Data Entry Forms

One feature of the World Wide Web that sets it apart from other Internet services is its capability to interact with the users through *forms.*

On some WWW pages you will encounter fields like those in the form shown in figure 3.22. These fields allow you to submit information to a WWW server by filling in the spaces provided. Depending on the WWW page, this information might relate to a

membership application, a search form, delivery details for an online purchase, or even your responses to online messages on a service like WebChat.

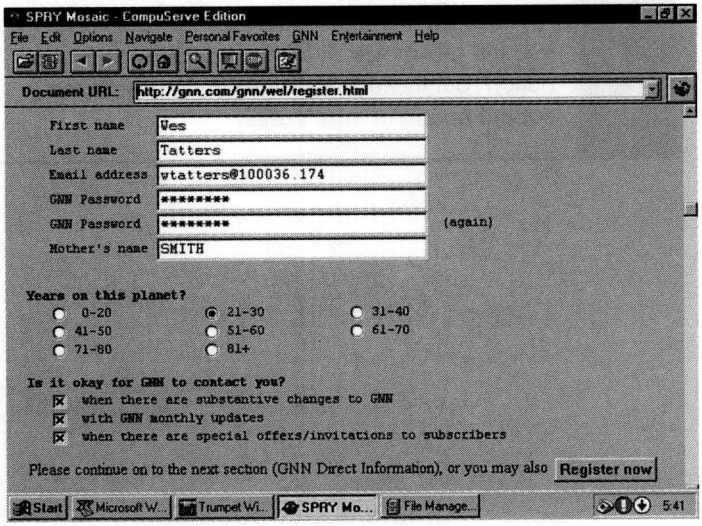


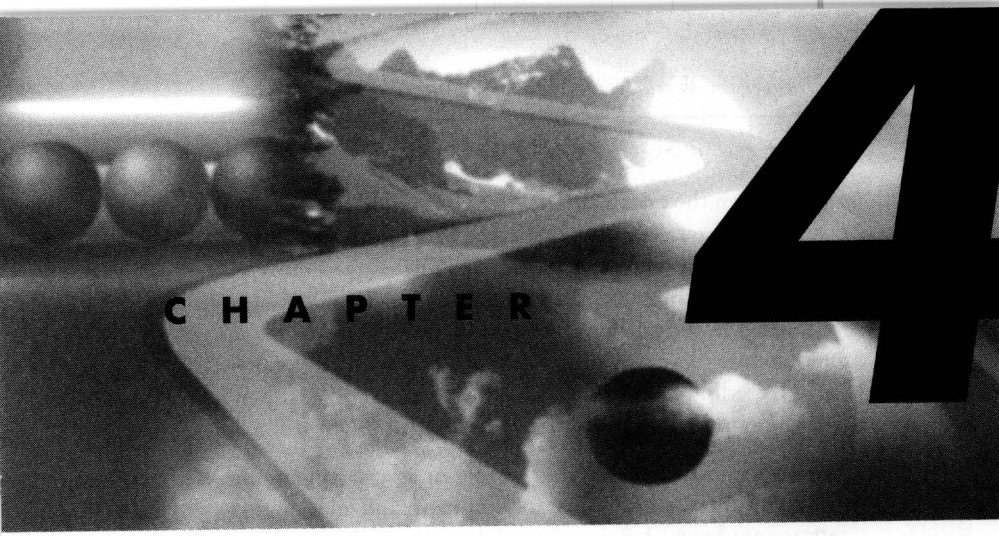
Figure 3.22. *The GNN registration form allows you to become a registered GNN user.*

The form shown in figure 3.22 is a part of the application form you are required to complete when subscribing to GNN—the Global Network Navigator. In addition to data entry fields, many forms also contain *radio buttons* like those under the `Years on this planet?` message. These buttons allow you to choose a single option from the list provided. Other forms include *check boxes* like those listed under the `Is it okay for GNN to contact you?` message. Check boxes allow you to select any or all of the corresponding options.

When you have completed the information requested by the form, you must then submit it to the WWW server. On most forms, you do this by clicking on a Submit button. In this example, however, you need to click on the Register Now button shown at the bottom on the screen.

Note

If you mess up a form, you can often start fresh by clicking on the Reset Form button. Doing this removes all the information you have entered into the form. Not all forms include such a button, but those that do display it beside the Submit button in most cases.



By Neil Randall

The World-Wide Tour

The question is: What would a tour of the World Wide Web consist of? Would it consist of a look at a variety of the possibilities for page design and information presentation? An attempt to show the changes in the look and feel of the Web over time? Or would it simply take a bunch of random Web pages, make sure they look either pretty or rich, and throw them together under the idea of judge-for-yourself?

No. A tour of the World Wide Web should be, quite simply, a tour of the world.

Not an extensive tour. That would take page after page of fascinating description, evaluation, and screen displays, and wouldn't be nearly as enjoyable as doing it yourself in the first place. Instead, this tour should touch on the many nations, people, and designs that make up the Web, focusing not on the technology or the sheer amount of information, but rather on the fact that the Web is, indeed, worldwide.

That's been the exciting part, after all. Yes, there's an unbelievable wealth of resources out there on the Web, just waiting for you to click and claim them; but for the first few years of the Web's existence, watching the Web become a global tool has been truly inspiring. In early 1994, it seemed that every week someone in a new country was providing Web information, and the first click on a hyperlink leading to that country was exciting. If you're just getting started on the Web, that excitement might still be there.

That's why we've chosen the world tour as a starting point. We'll get to business, education, entertainment, and all the other attractions later—because they all have their necessary place. But for now, sit back and pretend it's the first time on the Web—and just grab the mouse and let fly.

The Virtual Tourist

Any time you want to find points on the Web by what country they reside in, Brandon Plewe's Virtual Tourist is a superb place to begin. An immensely popular site practically since the Web first supported clickable graphics, the Tourist (shown in figure 4.1) consists of a series of imagemaps of the world, the continents, and then the countries. To find your way to sites in various parts of the globe, click the maps where you want to go. For the first few clicks, you'll remain on the server at the University of Buffalo, but before long you'll be elsewhere in the world, marveling at what's out there.

Clicking the European continent on the World map takes you to the European map shown in figure 4.2. You could have chosen anywhere, but Europe is a good starting point for a very particular reason: The World Wide Web had its origins in Europe, at a high-energy physics laboratory called CERN, in Switzerland. So start there (you have to start somewhere), although you won't follow the geographical development of the Web as you tour.

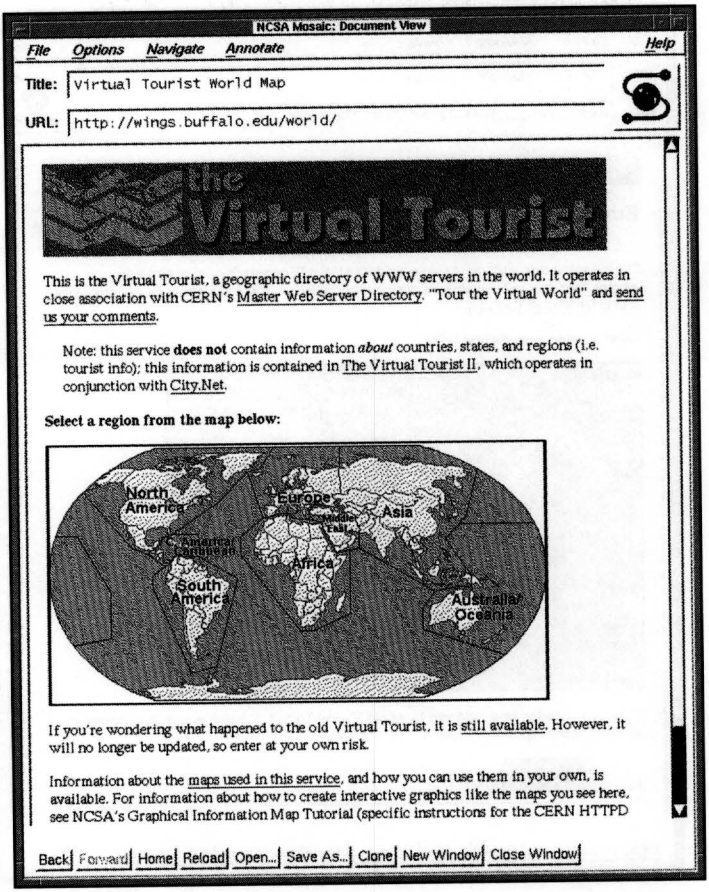


Figure 4.1. *The Virtual Tourist, X Mosaic—*`http://wings.buffalo.edu/world/`.

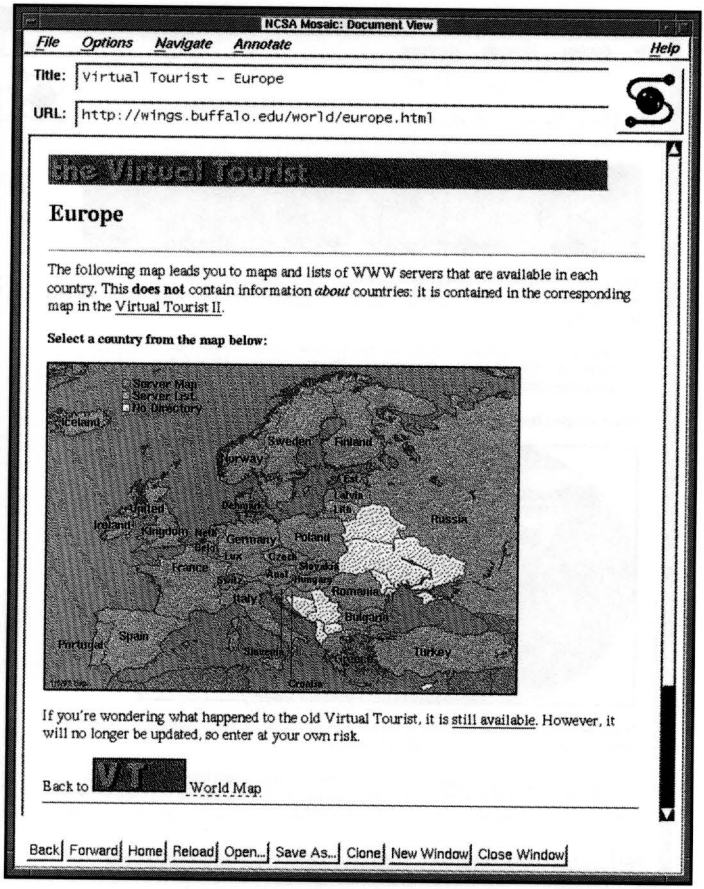


Figure 4.2. *The European map from the Virtual Tourist—*`http://wings.buffalo.edu/world/europe.html`.

Switzerland

From this map, it's on to Switzerland. Clicking the country of Switzerland from the European map retrieves the Web site shown in figure 4.3. Yet another imagemap (you won't be seeing all of these as we do your circumnavigation), this one gives you a colorful series of links to a host of Swiss Internet sites, most of which are accessible by scrolling down this long page.

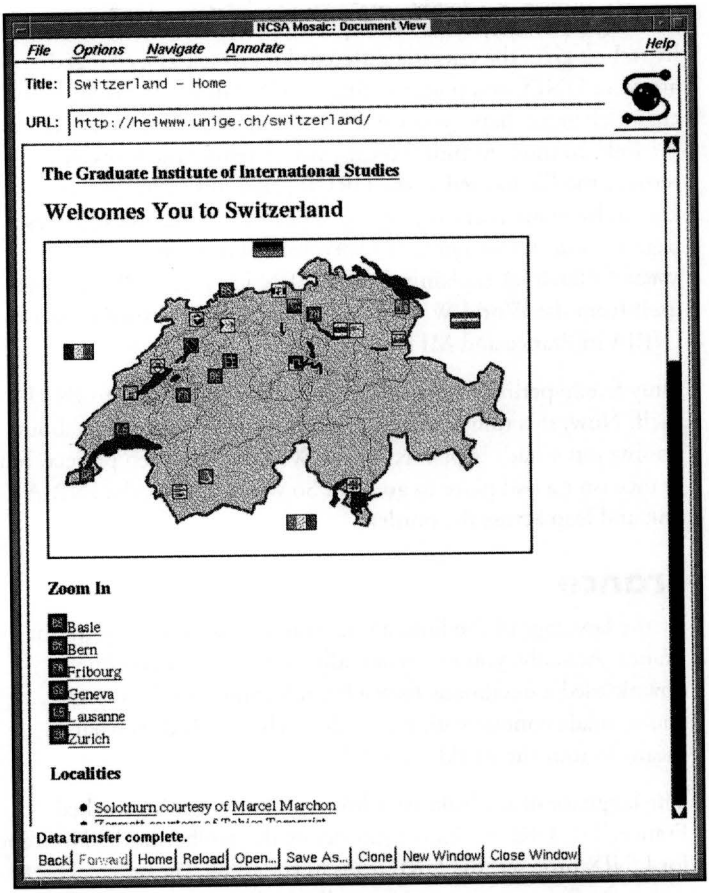


Figure 4.3. *The imagemap for Switzerland, direct from a Swiss computer, Xmosaic—*`http://heiwww.unige.ch/switzerland/`.

For now, though, scrolling isn't necessary. The Web started at CERN, the European Laboratory for Particle Physics in Geneva, so all you need to do is locate the Geneva site on the map and click directly on it. Doing so takes you to an even smaller scale map, this time of Geneva and its surrounding territory (not shown here), where the first hyperlink is to this laboratory. The URL (Universal Resource Locator, or address) for this page is `http://www.cern.ch/`; it tells you in the first line that CERN is the birthplace of the World Wide Web.

Moving the cursor to the "birthplace of the World Wide Web" hyperlink gives the cursor a different look (such as a changed arrow in UNIX or a pointing finger in Windows). As soon as the cursor changes shape, you can click the mouse button and activate the link. In more technical terms, you're telling the browser to retrieve the file located at the URL for that link. This process is known by many users as *jumping*. In this case, the link retrieves a page at `http://www.cern.ch/CERN/WorldWideWeb/WWWandCERN.html` explaining that CERN has practically removed itself from the World Wide Web project, having turned it over to INRIA in France and MIT in the U.S.

Only five hyperlinks are available from this page—one to INRIA itself. Now, this tour is about seeing the world rather than about finding out what's happened to the World Wide Web project, but France isn't a bad place to go next. So why not click the INRIA link and leap across the border?

France

By the language of the links alone, you're now at a computer in France. Actually, you're not actually *at* the computer; you've downloaded a document *from* a French computer. In any case, you've made contact with a French machine, which is what it means to tour the world on the Web.

The language of the links isn't how you know you've reached France. The URL is. Shown just below the toolbar in the Netscape for UNIX browser, the URL reads `http://www.inria.fr`. The `fr` stands for France; you can often tell which country you've connected to by looking at the end of the URL. You'll see several other country codes as you tour.

Note

So far, you've seen two ways to move from country to country. The Virtual Tourist makes this kind of touring obvious, but it's equally possible to find links to Web sites from within Web pages. From this point on, we'll take less

time to get to where we want to go. Instead of moving laboriously from page to page, we'll simply make the leaps and examine the resulting pages. Many of these will be accessed from the Virtual Tourist, which is always a worthwhile place to begin.

Now that you've seen the scholarly side of things, it's time to leave the labs and head out into the France you'd *really* like to visit—the one with the Eiffel Tower and the vineyards. To do so, head back to the Virtual Tourist and work your way through the map of Europe and into the map of France, at `http://wings.buffalo.edu/europe.html`. From there, click `France`, and eventually you'll get to the tour of Paris, complete with the Eiffel Tower, at `http://www.cnam.fr/louvre/paris/hist/tour-eiffel.html`. This is part of an historical tour of Paris, and it leads directly to the famous art museum *Le Louvre.*

Spain

Now head southwest, across the Spanish border at `http://www.uji.es/spain_www.html`. This is an impressive page, complete with a 3-D sculpted title, map, and icons. The country code of the URL (`es`) tells you that you've connected with a Spanish computer; it's obvious how you get from here to anywhere else. Of particular interest are the links to Madrid and Grenada, but others are well worth trying.

United Kingdom

Across the water to the north is the United Kingdom; in particular, you come to Oxford, one of the most renowned locations in the country. The Oxford Information page, available at `http://www.comlab.ox.ac.uk/archive/ox.html`, offers all kinds of information about Oxford, the university, and the surrounding territory. Not only can you visit museums and libraries, you can head for the pubs and retrieve a fascinating document called "The Aliens' Guide to Oxford." You could spend hours at this one site alone, but you have other places to visit.

Netherlands

Across the channel from the UK, you come to the Netherlands, where the Web was useful as an information tool during the flooding in February 1995. In particular, you'll stop on the west coast, at the home page for Erasmus University in Rotterdam (`http://www.eur.nl/`). The Netherlands has been active on the Internet for a long time, and the number and strength of their resources demonstrate this activity. This particular home page is useful without being spectacular, and there are many such pages across the Web.

Norway

Surfing quickly over the North Sea takes you to Norway, a country that, with the rest of Scandinavia, has been actively involved in Internet activities since the early days. You can travel to The Oslonett Marketplace (`http://www.oslonett.no:80/html/adv/advertisers.html`), with its host of commercial sponsors—both local and global. A visit to the Norwegian home page is well worth your time, but the glories of Sweden beckon.

Sweden

It's always nice to find a site that won't be out of date immediately, especially when it's well designed and informative. Stockholm has been named (by the European Union) the European cultural capital for 1998, and the city's Webmasters have established a rich, colorful page to detail how it got there and what to expect if you visit (`http://www.sunet.se:80/stockholm/kultur98/kulturhuvudstad98.html`). If you have no interest in a gorgeous city with superb theater, food, and, well, other attractions, don't bother using this page as a basis for a real-world visit.

Russia

Despite Finland's strength in Internet and World Wide Web activity, we can't visit everywhere. So we'll skip right past the land of the reindeer and into Russia, which is showing Internet activity despite its woeful economic state. The home page for St. Petersburg is at `http://www.spb.su:80/`, and it's complete with commercial sponsorship and, impressively, a Web version of the city's major English language newspaper. Interestingly, the

country code for Russia is now `ru`, but many of its servers still bear the earlier country code, `su` (Soviet Union).

Germany

Once again skipping over a country with a growing Internet presence (Poland), you come to Germany— in particular, the capital of unified Germany, Berlin (`http://www.chemie.fu-berlin.de/adressen/berlin.html`). Available from the Berlin home page are links to a number of good graphics files, as well as substantial information about the city's history, politics, and commerce. You can also begin exploring Germany's extensive collection of Web sites from here, many of which are in the German language.

Italy

Working your way down central Europe, you'll find yourself in Italy, where Net and Web activity has been extremely strong. By now you might need some good, solid news, so pick up a newspaper and see what's going on. A typical daily issue of *il manifesto* (which you can see at `http://www.mir.it/oggi/`) contains the inevitable slightly-smaller-than-readable print. Italian Web activity includes an excellent range of tourist, research, and cultural activity, with many pages—as you might expect—in Italian.

Greece

Across the Adriatic lies Greece, where you'll sail to now (`http://www.ntua.gr/local/greece.html`). With no time to stop and visit (yeah, right—like you would bypass Greece in real life), let's head on out. Greece isn't exactly swarming with World Wide Web sites, but there's a start. Many countries in the Eastern areas of Europe are in roughly this position.

Turkey

It's not far from Greece to Turkey (as Agamemnon and Achilleus found out a wee while ago), and the two countries are fairly similar as far as their World Wide Web participation is concerned. At `http://www.ege.edu.tr:80/Turkiye/Fuar/`, you'll find a well-designed information page about Izmir, and there are worthwhile

picture tours of the country as well. Interestingly, there's a good selection of material *about* Turkey, especially archaeological documents, in some Australian Web pages, but that's not really what we're after. For other good Turkish material, locate the pages for the Middle East Technical University (METU) as well.

Israel

Also in the Middle East is Israel, where you'll see a significant degree of Internet activity. Although only relatively recent in placing information on the Net, and even more recently on the Web, enough interesting Web sites exist in Israel to make the Web trip more than worthwhile. A top service provider, Macom Networking, operates a server in Jerusalem wherein lies an immensely useful home page (`http://www.macom.co.il/index.html`). From here you can link to the Tel Aviv Museum of Art, the children-oriented Peace in Pictures Project, the Israel Democracy Institute, and if you're into somewhat less significant material, the Israeli Linux Users Web site.

South Africa

Moving way down south, across the equator and into the next hemisphere, in fact, you arrive in South Africa. The country's Internet activity is recent, but there appears to be sufficient Internet access to make an impressive start. Looking at the main page for Cape Town (`http://www.aztec.co.za/aztec/capetown.html`), you'll discover that the city is a contender for the Olympics in 2004. Unfortunately, there's not much else here to see, beyond some very good graphics. What's more useful is the link at the bottom of the page to the Internet provider, Aztec. From there, through a series of audio files, you can even learn to sing the national anthem of South Africa.

Malaysia

It's a long way from South Africa to Malaysia, fully across the Indian Ocean and other waters, but with the help of the Web you can make it in mere minutes, maybe even seconds. You'll land at a Malaysian information page (`http://mimos.my/doc/msia.html`), operated on a Malaysian server by the government. From here you

can get a considerable amount of basic information about Malaysia; if you have the patience and the disk space (a quarter megabyte's worth), you can download and listen to the national song. One link takes you to information and pictures about Kuala Lumpur, and other links to further information sources.

Thailand

Just in case you thought High Performance Computing Centers existed only in countries normally associated with a long history of technological bravado, take a look at Thailand's NECTEC (`http://www.nectec.or.th/bureaux/hpcc/home.html`). Here you can find information about computing projects underway in Thailand. If you click the link to NECTEC's home page, you'll find a wide range of additional Web activity in this country, as well as information about its locales.

Korea

Korea has demonstrated a very real strength on the Net in general and the Web in particular recently, and the number of Web sites continues to grow quickly. To get a good sense of what's available, and to see a page kept by someone who cares, fire up the Korean Web information page (`http://ara.kaist.ac.kr/ahmlhs/HTML/Korea/www_in_korea.html`). Not only does this site distinguish between types of organizations and delineates which sites are new, it also uses a distinctive special bullet system to tell you if the site is working well or poorly. The happy face, as you might expect, means things are fine.

Singapore

Singapore has developed an extremely impressive World Wide Web presence. In fact, its famous Singapore Online Guide was one of the first extensive tourist information pages anywhere. With the exception of Australia, this country is probably the best represented of all Pacific area nations on the Web, especially since Japan got off the mark quite late. The Online Museum of Singapore Art and History (`http://www.ncb.gov.sg/nhb/museum.html`), maintained by the government of Singapore, offers a small glimpse of the Web sites in store for you in the country.

Australia

Australia has been a hotbed of Internet activity since the early days of international participation, and remains one of the primary providers of Gopher sites. Their World Wide Web offerings are becoming increasingly impressive as well, and there's no better place to start than the two-designer creation (`http://www.csu.edu.au/education/australia.html`).

China

Despite what you might have heard, Internet activity is alive and reasonably well in China. The Web isn't exactly thriving, but there are some sites worth seeing. Check out `http://www.buct.edu.cn/`, which is especially interesting because of its multiple languages.

Japan

Although Japan came to the Internet community—particularly the World Wide Web community—surprisingly late, its Web contributions over the last year and a half demonstrate that it's in it for the long haul and the big time. The home page for the Center for Global Communications at the International University of Japan (`http://www.glocom.ac.jp:80/index.html`) is a research site that offers extensive information about its activities. This is only one of many Japanese pages, however, and with Netscape and other browsers you can see them in Japanese itself. Stay tuned to Japan, as always, for future Internet activities.

Hawai'i

Obviously, Hawai'i is part of the U.S., but we've given it a separate look for two reasons. First, it's a nice landing spot across the Pacific from Japan. Secondly, and somewhat more significantly, Hawai'i is one of the leaders in Internet activity, with an extensive commitment to state-wide networking and many exciting World Wide Web sites. Head to `http://www.hawaii.edu/News/weather.html`, which shows the Weather and Surf page from the University of Hawai'i (UHINFO), from which you can get infrared graphics downloads and all sorts of information you need to plan a surfing outing.

Chile

From Hawai'i it's off to the southeast coast of South America, where the Chileans have been offering some impressive World Wide Web documents. As you'd expect, most of the pages are not in English—something that will probably become more dominant around the world as the Web proliferates. The home page for Universidad Tecnica Federico Santa Maria in Valparaiso is at `http://www.inf.utfsm.cl/`; from this page you can get information about the university, links to other Chilean Web servers, and a range of other information.

Brazil

The Rio de Janeiro home page in Brazil is located at `http://www.puc-rio.br/english/mapario.html`. Actually, this is the English version of the page, whereas most Web pages coming out of Brazil are in Portuguese. What's interesting here is the level of graphics quality and the degree to which the page is selling the city. Somehow, Rio doesn't seem like a very hard sell, especially since, as I write this, it's snowing in April where I live.

Mexico

Mexico got a bit of a slow start in its quest for Internet perfection, but the number of sites is growing continually. Check out `http://www.spin.com.mx/`, which is the home page for a Mexican service provider—which, quite naturally, is in Spanish.

California

It's extremely well known by now that California (with a little help from Utah) is the place where the Internet got its start; so we'll visit the educational institution where the first Internet protocols were put into place. UCLA's Web site (`http://www.ucla.edu/`) has much to offer, including a virtual tour of the campus.

Canada

Canada wasn't far behind the U.S. in developing and sustaining an Internet presence, and it's been equally quick at a World Wide Web presence. There are information maps to the ten provinces

and the two territories, while the federal government has implemented a number of programs to hasten Canada's leap into the whole superhighway arena. Many Quebec-based pages are in French, and every province has pages to promote its location and wares. The home page for the government of the Atlantic province of New Brunswick (`http://www.gov.nb.ca/`) has its contents designed as an information binder.

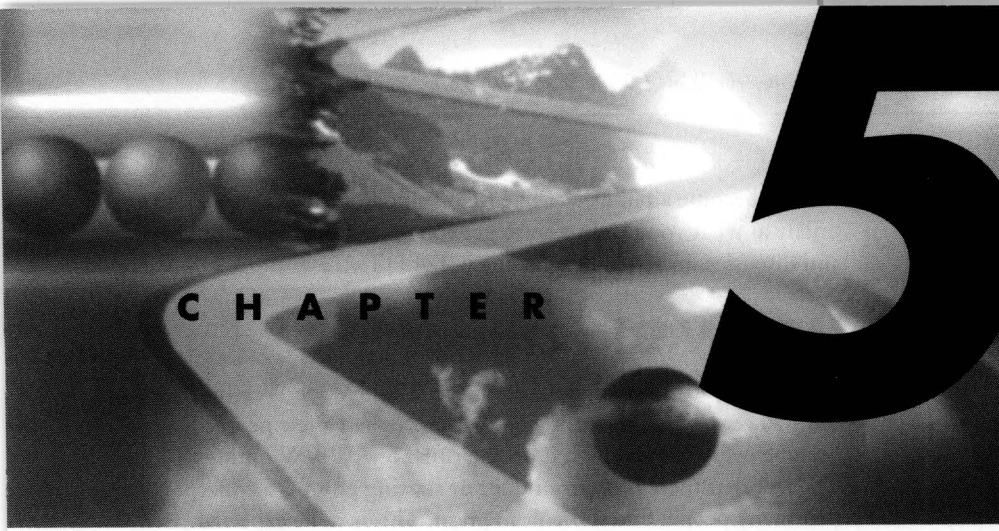
MIT

The world tour concludes with a visit to the Massachusetts Institute of Technology, better known as MIT. Why disembark here? Well, you started at CERN in Switzerland, the birthplace of the World Wide Web, so it makes sense to stop at MIT, where the Web and its founder, Tim Berners Lee, currently reside. MIT is working with CERN and the European INRIA to develop the Web project beyond its current stages, and currently much of the "official" research is being undertaken and/or supervised from this site. Go to `http://www.w3.org/hypertext/WWW/Consortium/`, the page of information about the consortium; this page includes links to the Laboratory for Computer Science at MIT.

The End

That's it. You started in Switzerland, moved around Europe, went south into Africa and east to Southeast Asia, and then went through China and Japan and across the waters to Hawai'i. From there, you traveled southeast to Chile, came northeast through Rio de Janeiro and then into Mexico, and moved through California and across the North American continent to New Brunswick. You ended where the Web project flourishes, at MIT in the heart of New England.

And you did it all without leaving the computer and the comfy chair you happen to be sitting in. That's the kind of power the World Wide Web offers, and as page designs, connections, and technologies improve further, a journey like this could easily become at least a fraction as good as the real thing. As it is, it's exciting, and it remains fascinating. To connect to computers around the world on any given day of any given week, with very few restrictions and for some very real information, can never be anything less.



By Wes Tatters

Finding It on the Web: Directories, Search Tools, and Cool and Unusual Places

Now that you have the world at your fingertips, so to speak, it's time to take a look at some of the ways that you can locate home pages and WWW sites by using the World Wide Web. Instead of creating a shopping list of popular World Wide Web sites, this chapter demonstrates ways that you can use the World Wide Web to locate interesting sites yourself.

To do this, this chapter first examines some of the major WWW directories and then looks at ways that you can search the World Wide Web and many other Internet services. Then, for those of you who really want http addresses and URLs, it briefly discusses a few of the more unique WWW pages.

Having said that, the World Wide Web is not just about pages of information provided by other people. It is also a place where you

too can become a publisher. The final section of this chapter looks briefly at what you need to do to get your own home pages online and discusses, in general terms, the use of HTML.

WWW Directories

With the mind-numbing growth of the World Wide Web in the last two years, it is not surprising that more than a few people have become overwhelmed with it on their first few WWW outings. The fact that there is no front door or starting point is a concept that many people find difficult to grasp. This is to be expected, however, because our whole society is accustomed to the use of maps and step-by-step plans that always have a logical beginning and end.

For this reason, a number of WWW sites have been set up for the sole purpose of providing you with at least a logical starting point. The endpoint is still up to you, but at least these pages give you some idea about where to start.

Scott Yanoff's Special Internet Connections

The Special Internet Connections list (figure 5.1) has been doing the rounds on the Internet in a variety of forms since 1991, when Scott Yanoff first published his personal list of Internet connections. The original list contained just six Internet sites, but since then the list has grown to contain links to thousands of World Wide Web sites, FTP servers, Telnet ports, Gophers, and mailing lists.

Since its inception, the list has been made available in a wide variety of formats, but with the growth of the World Wide Web, that version is now the most popular method of accessing the list. To explore the many links detailed in this list, use this http address: `http://www.uwm.edu/Mirror/inet.services.html`.

The list is collated by category, but not by service type. As a result, when you use this list you will often be transported to Gopher servers and FTP sites when you select a hotlink. To check the type of service that any link uses, examine the protocol section of the URL shown in the status bar when you place your cursor over its hotlink.

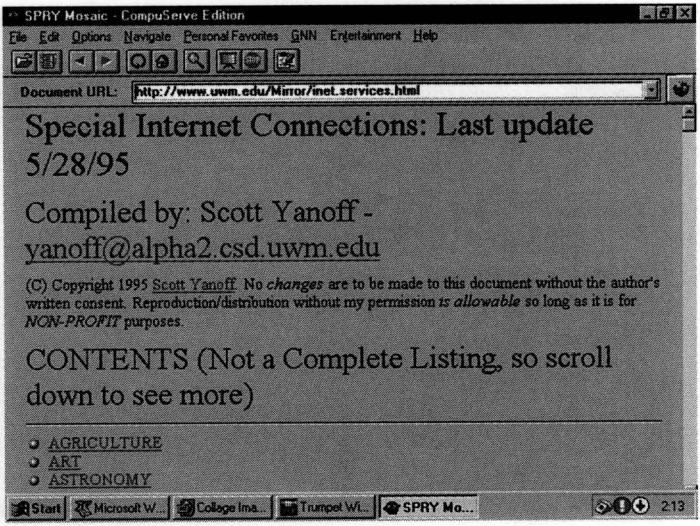


Figure 5.1. *Scott Yanoff's Special Internet Connections list includes not only WWW sites but also FTP, Telnet, and Gopher servers.*

Yahoo

Yahoo was created by David Filo and Jerry Yang, who according to *Newsweek* are two of the 50 most influential people on the Internet. They prefer to describe themselves as "Yahoos," however, and will happily direct anyone who does not know what a Yahoo is to this http address: `http://c.gp.cs.cmu.edu:5103/prog/webster?yahoo`.

Yahoo contains a comprehensive listing of popular WWW pages categorized by type. (See figure 5.2.) The site also contains a number of unique features, including

- A What's New list, which is updated daily
- A What's Popular list, itemized by category
- David and Jerry's personal What's Cool listing
- An integrated search capability
- A random link page that takes you to a random WWW page
- The Yahoo rating system

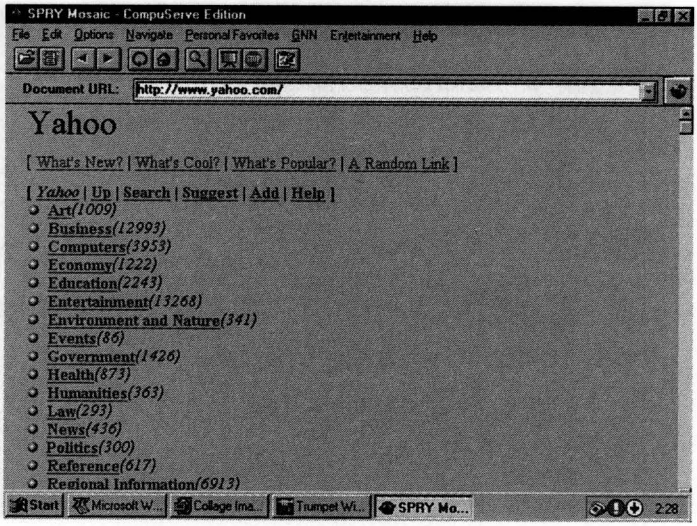


Figure 5.2. *The Yahoo WWW sites listing.*

Yahoo is provided courtesy of Netscape Communications, who provide both the server and network connections, which can be found by pointing your WWW browser to this http address: `http://www.yahoo.com/`.

> **Note**
>
> `http://c.gp.cs.cmu.edu:5103/prog/webster?yahoo` is an automated version of Webster's dictionary, containing both definitions and full cross-references. To look up the meaning of any word, replace `yahoo` with the word you are interested in.

The Whole Internet Catalog

This site is based loosely on The Whole Internet User's Guide & Catalog and contains links to all of the sites this book mentions, along with many new updates and additional references. (See figure 5.3.)

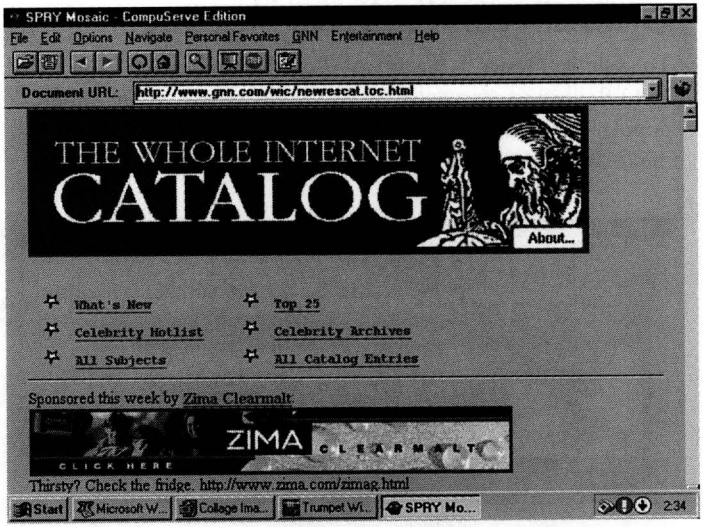


Figure 5.3. *The Whole Internet Catalog home page.*

Like Yahoo, this site contains a hierarchical list, categorized by resource type. It is not a comprehensive list; it contains only what its publishers consider to be the best WWW pages for each category listed. The advantage of this sort of list is that it helps you wade through the many thousands of pages on the World Wide Web that each tend to cover a topic in many different, though not necessarily effective, ways. This catalog reduces the number of sites you need to explore in your effort to locate information.

In addition to the general resource list, there are also special pages that cover the following topics:

- The Celebrity Hotlist, a page where special Internet guest editors are invited to share their most popular WWW pages
- The What's New listing
- The Top 25 WWW sites

The Whole Internet Catalog is provided as a part of the Global Network Navigator (GNN). To explore the links this catalog provides, use the following http address: `http://www.gnn.com/wic/newrescat.toc.html`.

Global Network Navigator

The Global Network Navigator (GNN) itself, which is provided by O'Reilly and Associates, also contains links to many other popular sites and services. (See figure 5.4.) To access this site use the following http address: `http://www.gnn.com/`.

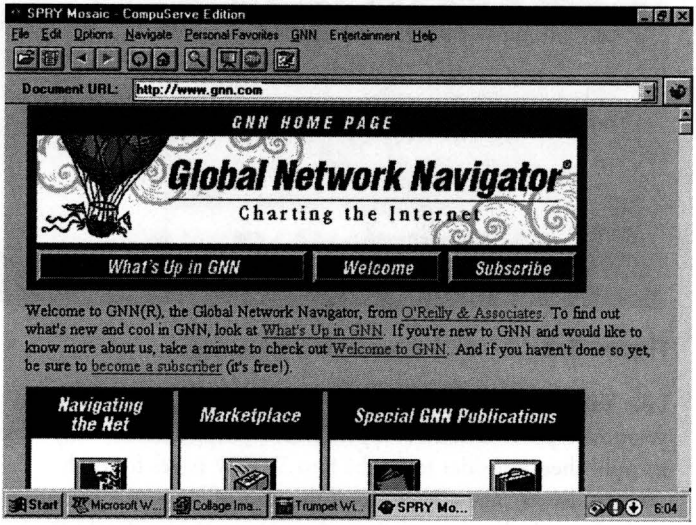


Figure 5.4. *GNN—The Global Network Navigator.*

In addition to The Whole Internet Catalog, GNN maintains a number of specialized WWW lists that include the following subjects:

- Best of the Net
- Personal finance
- Education
- Net news
- Sports
- Travel

The table of contents for GNN also provides a very good list of major WWW sites and popular home pages at `http://gnn.com/gnn/wic/internet.toc.html`.

> **Note**
>
> Before you can use many of the services offered by GNN, you will need to become a subscriber. There is no cost involved in doing this. All you need to do is complete the Online Information form that is available from the GNN home page by selecting the Subscribe option.

The WWW Virtual Library

By far the most comprehensive list of WWW pages currently available can be found at the WWW Virtual Library, whose http address is `http://www.w3.org/hypertext/DataSources/bySubject/Overview.html`. (See figure 5.5.)

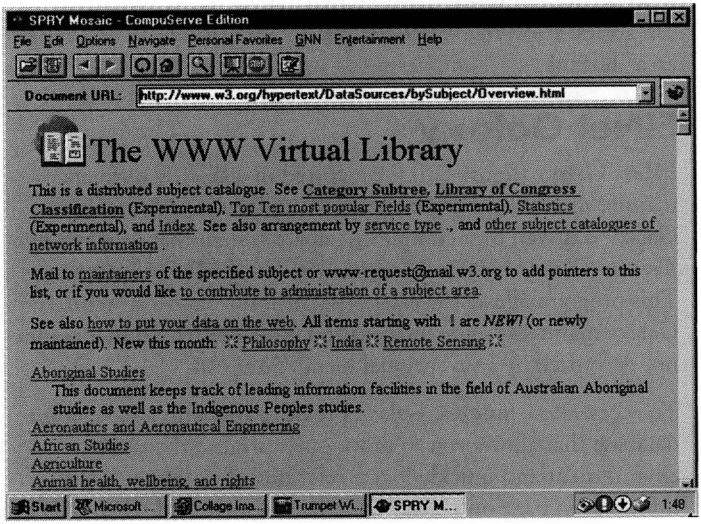


Figure 5.5. *The WWW Virtual Library contains links to most WWW pages.*

The WWW Virtual Library categorizes the pages it contains into over 150 major classifications, which themselves are often further broken down into more specific topic areas. As you may have

already noticed, this service is provided by the W3 Consortium as the primary resource for WWW-related indexes. To this end, there are also a number of special pages that provide you with additional information, including

- The Category Subtree
- The Library of Congress
- Top Ten most popular fields
- The Virtual Library Index
- The Virtual Library by service type
- A list of other Internet catalogs

This site also operates in a slightly different manner than most other major lists. If someone discovers a category that is not properly represented in the Virtual Library, instead of just letting the administrators know that they have been remiss, that person often takes over the maintenance of this new area and keeps the links it contains up-to-date. To make suggestions about new categories, select the "to contribute to administration of a subject area" hotlink.

EINet Galaxy

EINet Galaxy (figure 5.6) is organized in a slightly different manner than the other major WWW directories. At its core, Galaxy is driven by a complex database system that uses a *manufacturing automation and design engineering* (MADE) program. This program allows the categories, or information structures, Galaxy maintains to be indexed and cross-referenced in a manner not permitted by conventional hierarchical lists.

To access these indexes, Galaxy provides you with a navigation database that allows you to move easily around the Galaxy environment and quickly locate relevant information. Every information page on Galaxy contains a search field where you can enter words you want to locate. When you enter a word, a new information list is displayed that outlines all of the related information structures.

To complement the navigation database, there are also service-specific databases that allow you to search for Gopher, Telnet, and WWW links separately.

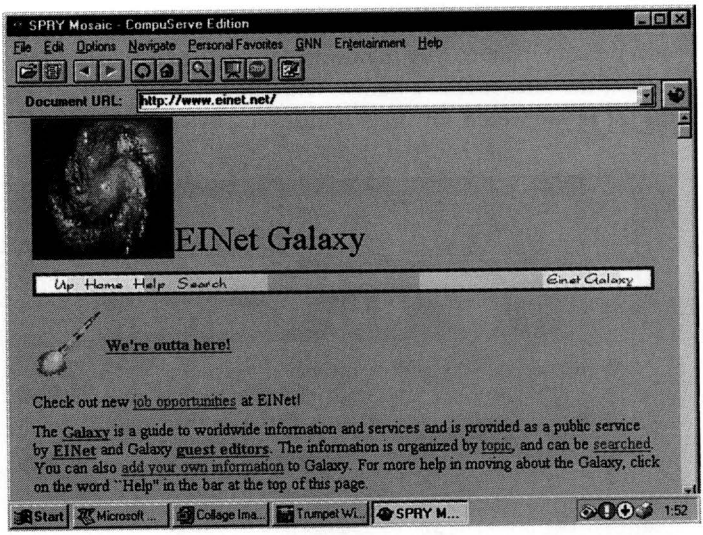


Figure 5.6. *EINet Galaxy lets you search a variety of databases for WWW pages.*

If you are interested in exploring Galaxy, you can reach it via the EINet home page at `http:/www.einet.com/`.

> **Note**
> This site also contains information about the variety of services and tools offered by EINet, which include the WinWeb WWW browser and a variety of other browser and server products.

Spry HotLand

Although far from being the most comprehensive list of WWW sites available, for Spry Mosaic users, HotLand (figure 5.7) offers some unique capabilities.

Spry bills this page the "home of the hottest sites on the Internet." To achieve this claim, Spry professionals have spent considerable time combing the WWW looking for hot sites that offer both the best and most unique services. Although their choice of sites is still

based very much on personal opinions, HotLand comes into its own because it allows you to download a copy of all of the links in each of the categories as a hotlist. Once downloaded, you can open the list as you would any other hotlist.

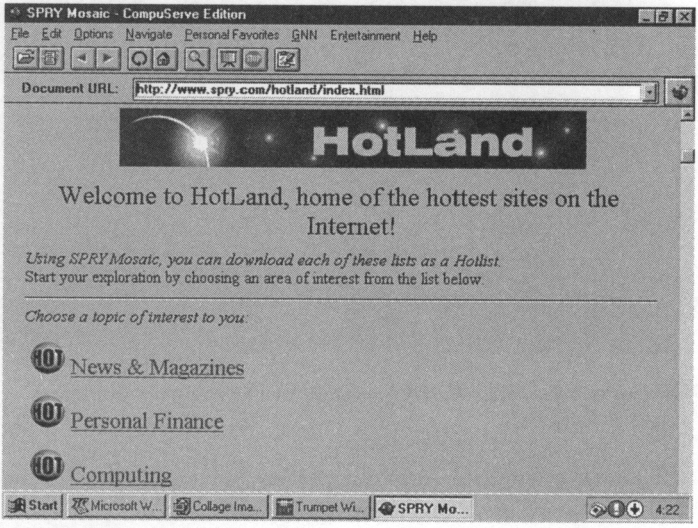


Figure 5.7. *HotLand WWW categories can be downloaded to your computer in the form of Spry Hotlists.*

To obtain a copy of these hotlists or to simply browse the sites Spry nominates as the hottest on the Internet, use this http address: `http://www.spry.com/hotland/index.html`.

The Mother-of-all BBS

For a different approach to the categorization of WWW pages, take a look at the Mother-of-all BBS listing (figure 5.8). This site is very much a self-service directory that allows anyone to create new categories—called BBSs—and add new entries to existing ones. The http address for the Mother-of-all BBS is `http://www.cs.colarado.edu/homes/mcbryan/public_html/bb/summary.html`.

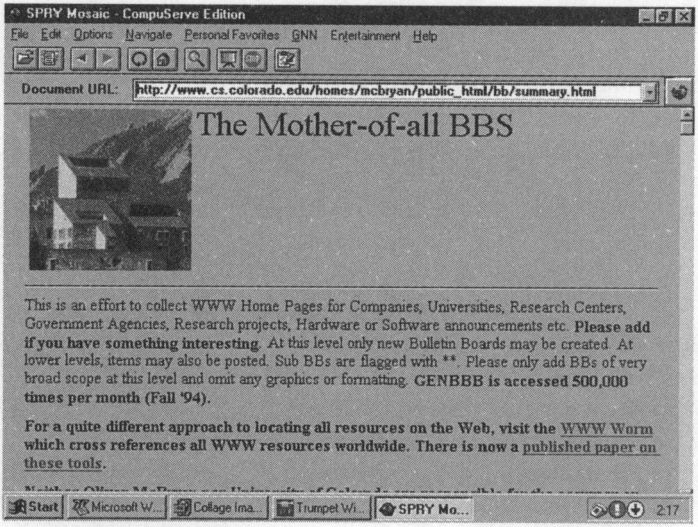


Figure 5.8. *The Mother-of-all BBS.*

WWW Search Tools

If spending hours scanning endless lists of WWW pages is not your style, maybe a more direct approach will better suit your needs.

With more than four million pages of information now directly available via the World Wide Web, not to mention the countless FTP and Gopher sites, it did not take too long for a number of WWW search tools and utilities to appear. Many of these tools provide access to a variety of information sources, including WWW pages, FTP sites or files, and WAIS directories.

This section examines some of the more popular WWW search tools and provides you with details about the types of information indexed by each.

Lycos

By all accounts, the most comprehensive index of WWW sites is maintained by a search tool developed at Carnegie Mellon

University. The name of this tool is Lycos. (See figure 5.9.) As of the time of writing, Lycos had indexed 4.4 million WWW pages and was adding thousands of new pages each day.

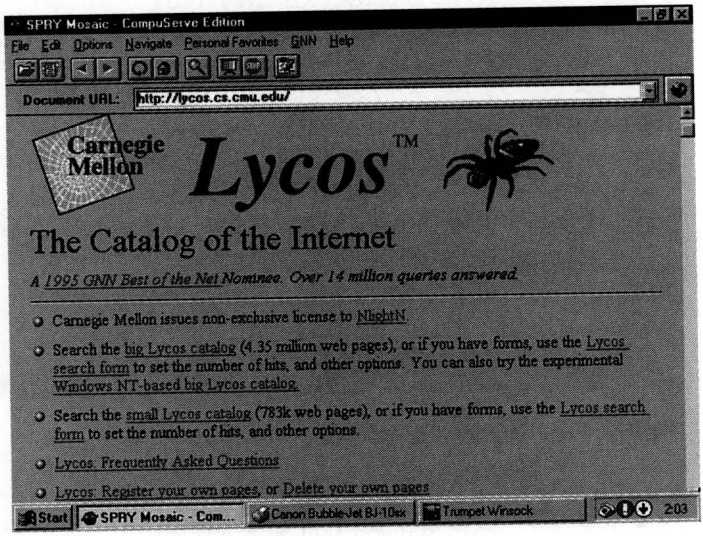


Figure 5.9. *Lycos is the most comprehensive WWW index currently available.*

Like many of the WWW search tools currently available, Lycos has created its impressive index by automatically exploring the World Wide Web, page by page and link by link, following all of the paths each page offers and recording each one as it visits it. In the last six months, Lycos has become one of the busiest places on the World Wide Web, with over 15 million requests for information being answered.

To access this index, Lycos provides a variety of search options that allow you to search either the full database or a smaller "recent pages" database. There is also a simple search page and a more complex form-based page that lets you configure details such as the number of matches reported and even the search benchmarks. On the home page shown in figure 5.9, you can choose any of these search options and select from pages that contain information about the use of Lycos. You can reach this page at `http://lycos.cs.cmu.edu/`.

When you type a word or combination of words into one of the search fields provided, Lycos searches its index and displays a list of results that match your query on a page similar to the one shown in figure 5.10. From here you can select any of the links that Lycos has returned to take you directly to the WWW page described.

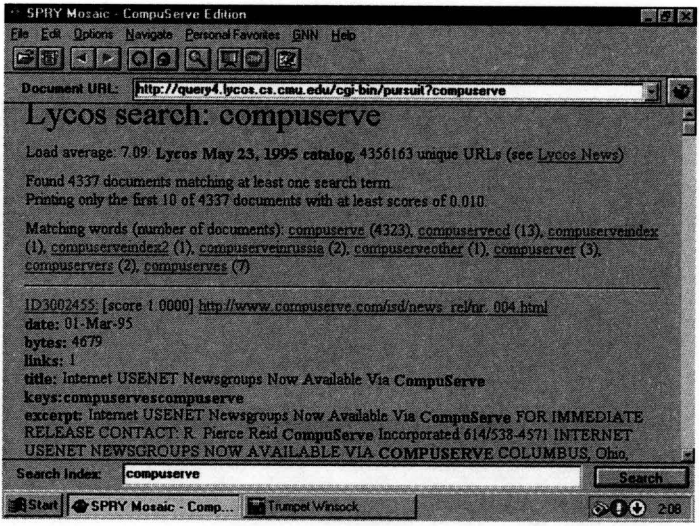


Figure 5.10. *You can select any of the links listed in the results of a Lycos search to move straight to the nominated page.*

> **Note**
>
> In spite of its popularity, Lycos is still only in beta release. In the future, its author plans to include extended Boolean features and possibly a search capability, known as relevance feedback, made popular by WAIS.

Spry's Wizard

For users of Spry Mosaic, a special search tool called the Spry Internet Wizard allows you to create hotlists based on search results.

Like Lycos, the Internet Wizard lets you search an index consisting of WWW pages by entering a word or combination of words. Where it differs, however, is in the addition of the check box, shown in figure 5.11, just below the search field. If you select this box, when the Internet Wizard completes its search, a hotlist is created that contains all of the links that were located. You can then download this hotlist to your local hard drive and install it on your menu in the same manner as any other hotlist you are currently using.

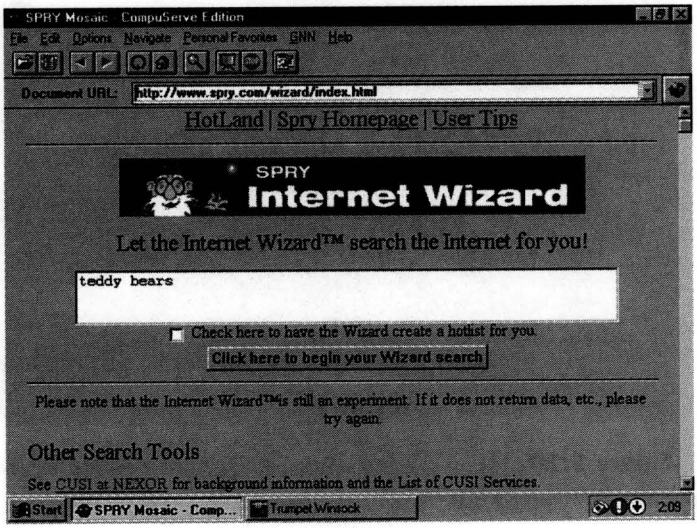


Figure 5.11. *Wizard creates downloadable hotlists based on the results of the searches it conducts.*

To access the Internet Wizard, select it on the CompuServe home page or use the following http address: `http://www.spry.com/wizard/index.html`.

ArchiePlex

The World Wide Web is not limited to providing WWW search tools. There are a number of other services currently available

online that index many other popular Internet sources. Of these, one of the most popular is ArchiePlex.

ArchiePlex is a World Wide Web extension to the Archie. Instead of using a Telnet connection or a dedicated Archie client, by taking advantage of ArchiePlex, you can use the World Wide Web to locate files stored at anonymous FTP sites. (See figure 5.12.) In addition, once you have located the files you are interested in (figure 5.13), you can also take advantage of the FTP capabilities built into each WWW browser to retrieve a copy of the files and store them on your local hard drive.

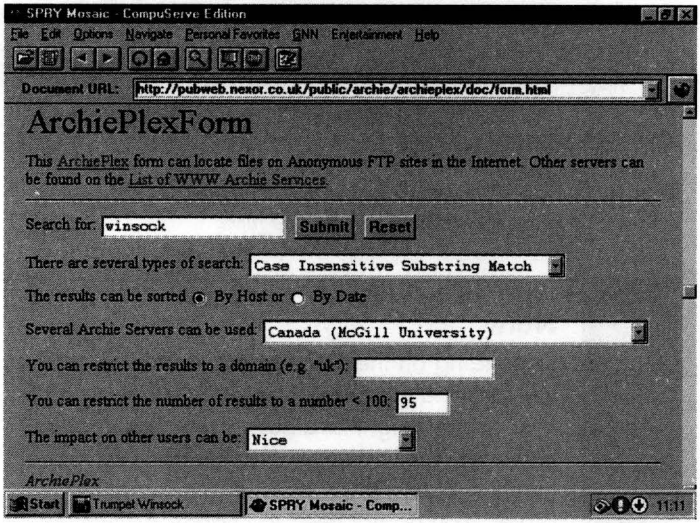


Figure 5.12. *ArchiePlex, the WWW gateway to files on FTP servers.*

There are a number of ArchiePlex pages that you can choose from, operated by WWW sites all over the Internet. To view a list of all the ArchiePlex pages currently available, point your WWW browser to `http://pubweb.nexor.co.uk/public/archie/servers.html`.

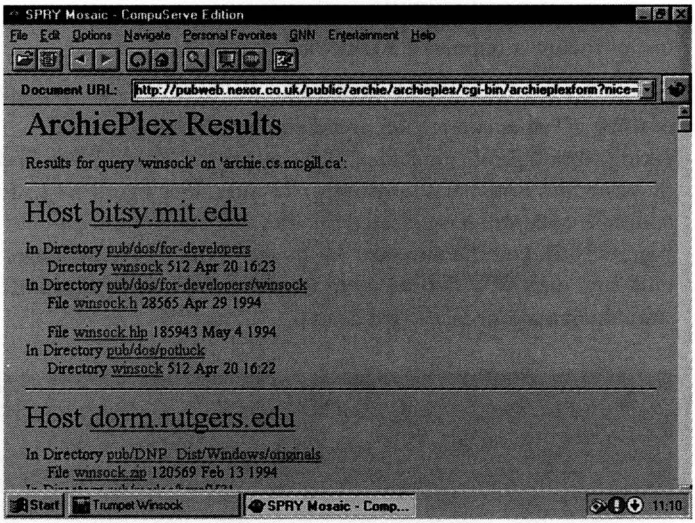


Figure 5.13. *When ArchiePlex returns the results of a search, you can simply select any of the files listed to download them.*

> **Note**
>
> Depending on the time of day, Archie servers will respond to your queries with either promptness or downright tardiness. If you find that you have not received a response within a couple of minutes, cancel the request and try another server. You do not need to change ArchiePlex pages to do this. Simply adjust the Archie server field on the request form.

WAISgate

Although most WWW browsers are capable of directly communicating with WAIS servers, the results obtained when they do are often less than suitable. To get around this problem, WAIS Inc., one of the leading WAIS publishers and developers, provides a WWW gateway called WAISgate. (See figure 5.14.)

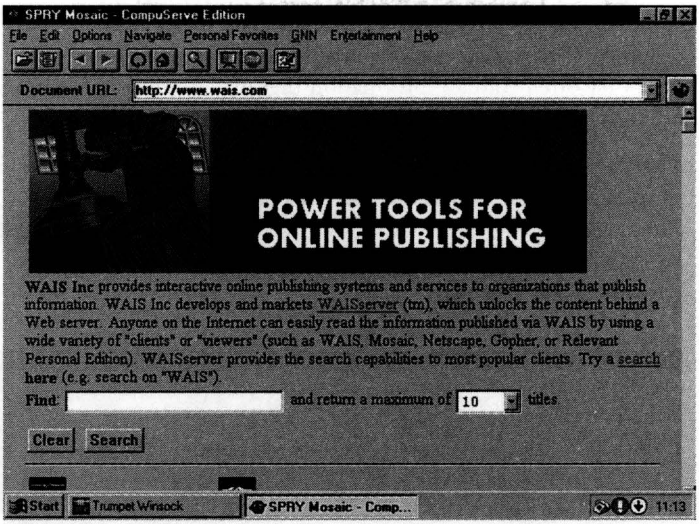


Figure 5.14. *WAISgate gives you full access to the files and databases available via WAIS.*

This gateway offers a form-based interface that greatly enhances the WWW/WAIS interface and provides a method of operation that seamlessly integrates the two services.

To access WAISgate, use the following http address: `http://www.wais.com/`.

> **Note**
>
> WAIS, Inc. is currently working on a new release of WAISgate dubbed WAISgate 2.0. To try a sample of what they plan to offer, select the WAISgate 2.0 demo option on the WAIS Inc. home page.

Popular WWW Search Pages and Locations

Apart from the four services already mentioned, there are about 20 other major WWW or Internet indexes and search pages, each of

which offers a slightly different user interface and index. Most are not as comprehensive as those already discussed, but at the same time they often contain information that may not be available on other pages.

There are a number of ways to locate these different pages, the simplest of which is to follow the links on one of the WWW search tool pages. Figure 5.15 shows the list provided by Netscape on its WWW search page at `http://home.mcom.com/escapes/internet_search.html`.

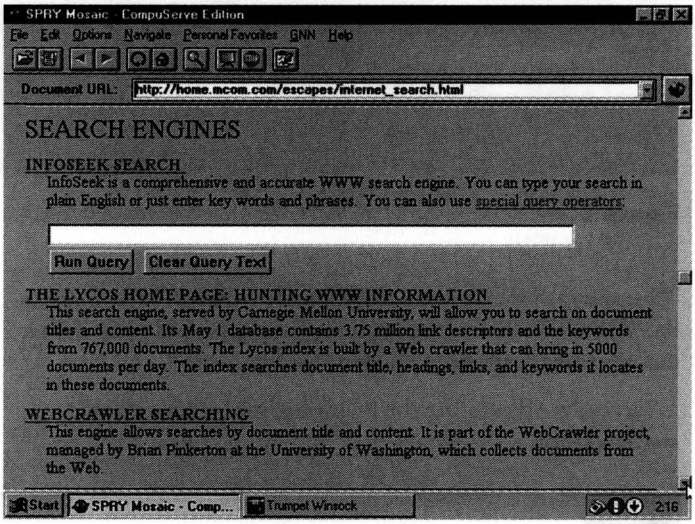


Figure 5.15. *The Netscape list of search tools and utilities.*

This page also features a direct link to the new commercial InfoSeek WWW index, which aims to provide the most comprehensive Internet index ever created.

At the bottom of this page is a link to a page known as the Configurable Unified Search Engine (CUSI). CUSI contains a list of all the known search engines that are accessible via the World Wide Web. These include:

- Lycos, WebCrawler, InfoSeek, and Jumpstation
- ALIWEB, Yahoo, Global On-Line Directory, and the CUI W3 Catalog

- Veronica, WAIS, and the Whole Internet Catalog
- ArchiePlex, CICA & SIMTEL Archives, HENSA Micro Archive

However, instead of just providing hotlinks to the appropriate pages, you can enter your search criterion in the space provided on the CUSI page (figure 5.16) and click the related search button. The search page will look after the job of connecting to the search engine you selected and the submission of your query request.

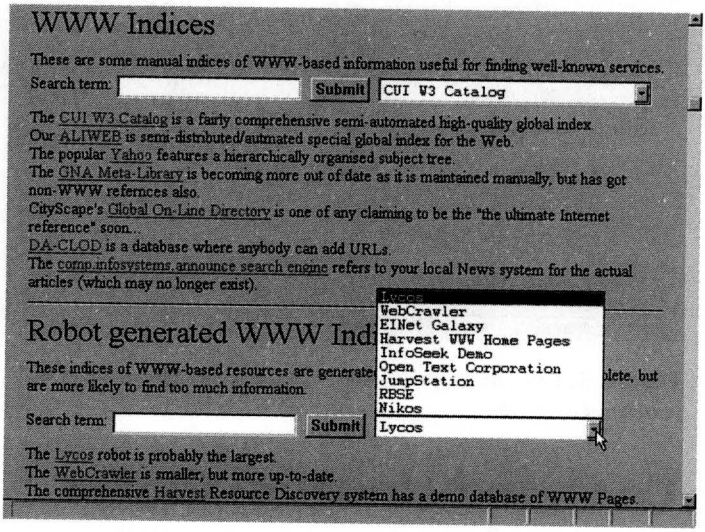


Figure 5.16. *Select the search engine you want to use and enter your query parameters. The CUSI page will look after the rest of the job for you.*

To use the CUSI interface, take a look at `http://pubweb.nexor.co.uk/public/cusi/cusi.html`.

> **Note**
>
> Access to CUSI is also available on the Spry Internet Wizard page at `http://www.spry.com/wizard/index.html`.

For a slightly different service that provides many of the same features, try `http://cuiwww.unige.ch/meta-index.html`. (See figure 5.17.)

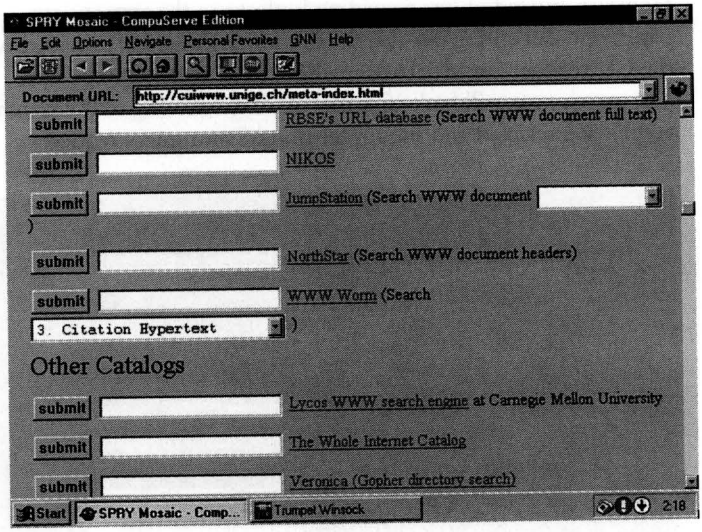


Figure 5.17. *Instead of drop-down boxes, this page lists each WWW search tool separately.*

Cool and Unusual Places

Because it seems that just about everyone else on the Internet now publishes a list of favorite places, why should I be any different? As a result, all of the WWW pages and links mentioned in this chapter are listed at my home page: `http://www.webcom.com/~taketwo/sams/nav-int-cis.html`. This is also the site of my Take Two film and television directory, among other things. (Cheap plug.)

As for the other things, in the pages that follow I have compiled a list of cool and unusual places for you to explore. This list is an ideal place to start your own exploration of the Internet and maybe even your own personal list—but more about that later. First the list: `http://www.webcom.com/~taketwo/sams/cool.html`.

GNN's Best of the Net

GNN's Best of the Net (figure 5.18) was first proposed in 1994 as a way of recognizing expertise in all areas of World Wide Web development. The nominees for this year's awards are currently being collated here, alongside the honorees for 1994. This list recognizes not just WWW pages, but also services such as Lycos and even programs like Netscape and NCSA Mosaic that have made an outstanding contribution to the development of the World Wide Web. It can be found at `http://gnn.com/gnn/wic/best.toc.html`.

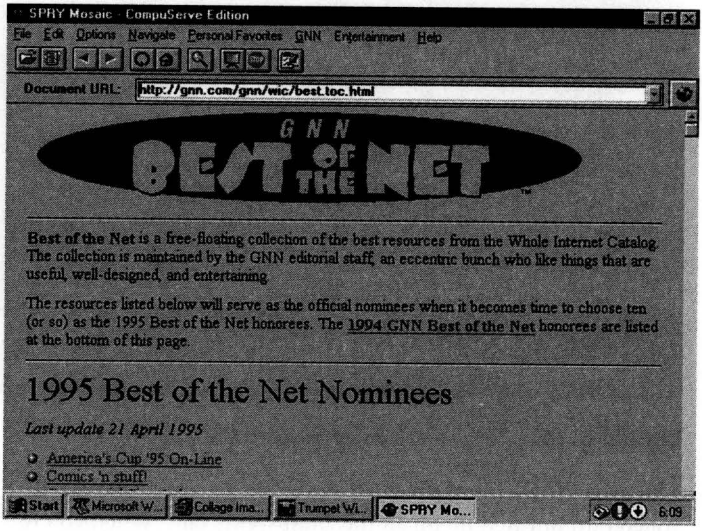


Figure 5.18. *It may not be the Academy Awards, but for Netsurfers the Best of the Net is just as important.*

> **Note**
>
> You might find a service that you think should be listed here; the bottom of the Best of the Net page contains instructions for making a nomination.

ESPNET SportsZone

If you're into sports, ESPNET SportsZone is the place to be. (See figure 5.19.) Each day, the latest news and information about many popular sports and sports personalities is brought to you live via the World Wide Web. The address is `http://web1.starnet.com:80/`.

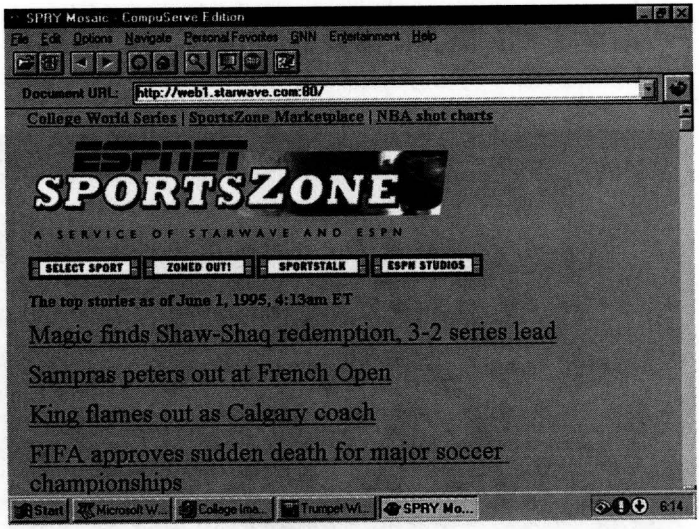


Figure 5.19. *The home of Internet sportscasting.*

You can either select from the list of sports covered, find out who's zoned out, or catch up on all the latest sports talk. When you're done, drop by the ESPN studios for all the late-breaking excitement.

The Movie Database

Have you ever found yourself in one of those arguments that seem destined to occur over coffee? Frankly, who really cares what character Clint Eastwood played in the first movie he both directed and produced? Nevertheless, it's a debate that will often drag on into the small hours of the morning. To solve this dilemma, what you really need is your handy laptop computer, a cellular modem, and the Internet Movie Database (figure 5.20). It

can be found at either `http://www.cm.cf.ac.uk/Movies/` or `http://www.msstate.edu/Movies/`.

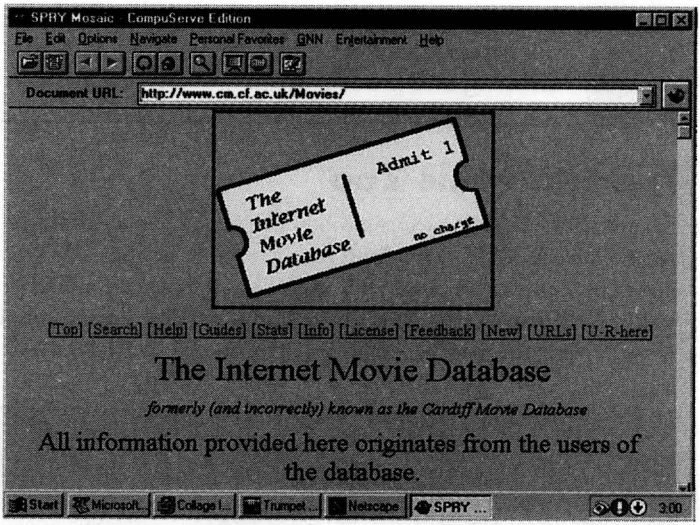


Figure 5.20. *A WWW interface to the Internet Movie Database.*

The Internet Movie Database is a classic example of what happens when a group of people with a good idea put their minds to making it happen. Since 1989, a small group of dedicated individuals have spent many thousands of hours creating what is one of the most comprehensive databases of movies, film, and television programs available today. To search this database, select the search option displayed on the home pages shown in figure 5.20. You will be presented with a list of search options that include the following:

- Actors and actresses
- Producers, directors, and writers
- Editors, cinematographers, and costume designers
- Movie titles, release dates, and running times

Based on these parameters and many others, you can search the database and examine movie plots, cast biographies, and even lists of goofs or crazy credits.

> **Note**
> For those of you who are interested in these things, the movie was *Firefox*, made in 1982. Clint Eastwood played Mitchell Gant while both directing and producing the finished product.

The Electronic Zoo

For animal lovers, the Electronic Zoo (figure 5.21) offers links to every related WWW page, along with a number of non-WWW sites. The Zoo was created by Dr. Ken Boschert, a veterinarian who spends many a late night surfing the Internet. It can be found at `http://netvet.wustl.edu/e-zoo.htm`.



Figure 5.21. *If it's about animals and it's on the Internet, you can find it here.*

At the Zoo, you will find sites categorized by both species and Internet service type. As a result, you can look for information by following a direct path to the animal of your choice or by a less direct, but often equally informative, path via a selection of Gopher, Telnet, mailing lists, electronic publications, and newsgroups.

To accompany this service, Dr. Ken also maintains the NetVet WWW and Gopher server, which contains information relevant to veterinary studies. The http address for NetVet is `http://netvet.wustl.edu/vet.htm`.

The White House

The White House site's biggest claim to fame is not the personal message recorded by the President or the Vice President. (See figure 5.22.) It is not the guided tour of the White House by the First Family. Nor is it the list of publications and information about the executive branch of the United States government. Instead, it is the recording of Socks (the First Cat), which can be downloaded during the First Family tour. If you don't believe me, take a look for yourself. I won't tell you exactly where it is, but yes, it is in there.

The http address for the White House home page is `http://www.whitehouse.gov/`.

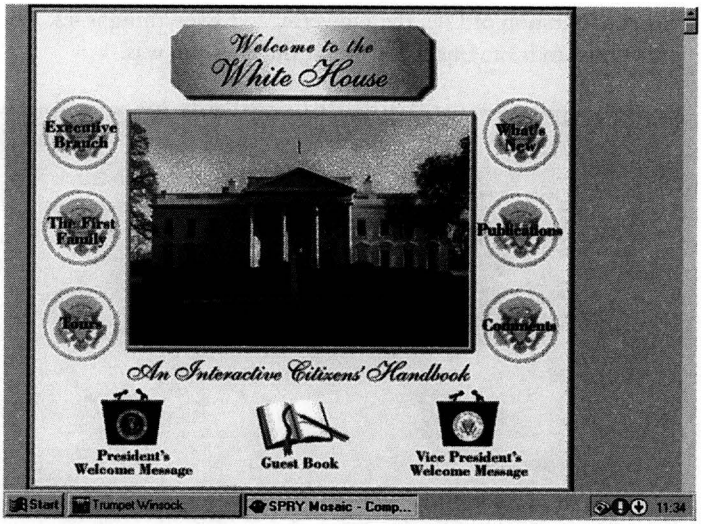


Figure 5.22. *Ever wanted to hear a personal message from the President of the United States? Click the President's Welcome Message button.*

> **Note**
> To hear any of the audio clips available on this site, your computer will need to be fitted with a suitable sound card. For those without a card, there is also a written transcript of each speech.

42—Deep Thought

If you are familiar with four books in Douglas Adams' infamous *Hitchhiker's Guide to the Galaxy* trilogy, this page might be of interest. Basically, the trilogy is all about the number 42. Far from being an example of a serious page, I have included it here to show that anything is possible on the World Wide Web. It's at `http://www.well.com/user/dljones/`.

For those of you who have not read any of the books in this series, in book two, *The Restaurant at the End of the Universe*, Arthur Dent, the book's reluctant hero, discovers that the answer to the ultimate question of Life, the Universe, and Everything is 42. The only problem is, no one knows what the question was.

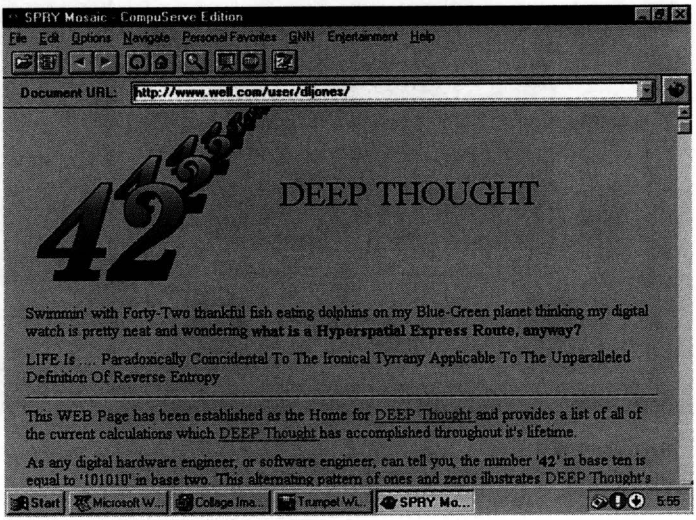


Figure 5.23. *The Hitchhikers Guide to what?*

Useless Pages, or America's Funniest Home Hypermedia

It seems to be a fact of life that the moment you turn a video camera on even the most seemingly normal person, a strange metamorphosis takes place that often results in the most astounding actions. Now it seems this same affliction is starting to appear on the World Wide Web. Give a person the ability to publish his or her own WWW page, and you often get some strange results.

And like the popular *America's Funniest Home Videos* program, there is now America's Funniest Home Hypermedia page to catalog these pages. (See figure 5.24.) If you really want to know the contents of Scott's sock drawer, this is the page for you. This is not to say that many of these otherwise useless pages are not worth paying a visit. Some, in fact, are extremely clever and in the past have resulted in their developers receiving considerable notoriety. This page is at `http://www.primus.com/staff/paulp/useless.html`.

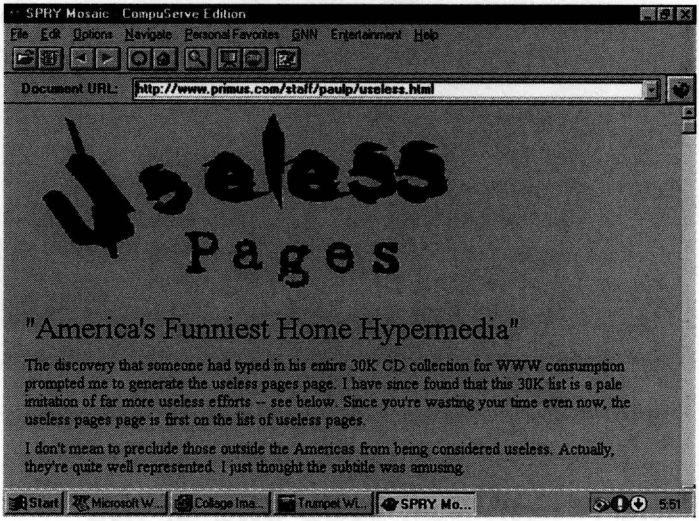


Figure 5.24. *More pages that exist because someone felt like creating them.*

> **Note**
> As a challenge, try to locate the HOTTUB page, which continually updates the temperature in Paul Haas's hot tub and refrigerator.

Understanding the Internet

To accompany their television special *Understanding the Internet*, produced in conjunction with the Discovery Channel, Cochran Interactive Inc. has created this special WWW site that provides more than 200 links to information that new Internet users will find invaluable. It's at `http://www.screen.com/start`.

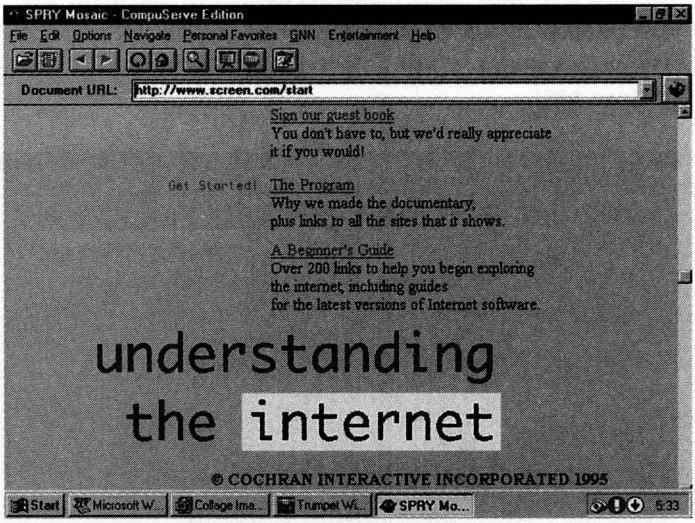


Figure 5.25. *If you want to learn more about the Internet, check out this site.*

The Macmillan Web Site of the Week

The Macmillan Publishing WWW site at `www.mcp.com` is the home of the Web Site of the Week competition (`http://www.mcp.com/hypermail/website/`). Web publishers are invited to

nominate themselves as contestants in this competition. At the end of each week, a new WWW site is selected based on its design, content, and overall originality. (See Figure 5.26.)

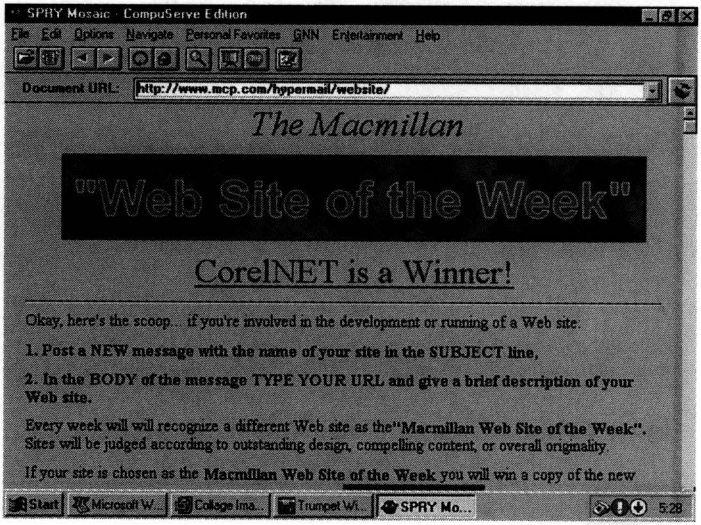


Figure 5.26. *Nominate your entrant for the Web Site of the Week competition.*

If you have created your own WWW site and would like it to be considered, all you need to do is follow the steps outlined on the competition page.

WebChat

In recent months, an innovation has appeared on the Internet that brings real-time communications like IRC to the World Wide Web. By taking advantage of the capabilities built into many new WWW browsers, it is now possible to use a site such as WebChat as an interactive alternative to IRC. (See figure 5.27.) Although they are still very experimental, many of these chat environments are rapidly gaining popularity as more and more people become aware of their existence. WebChat can be found at `http://www.irsociety.com/webchat/webchat.html`.

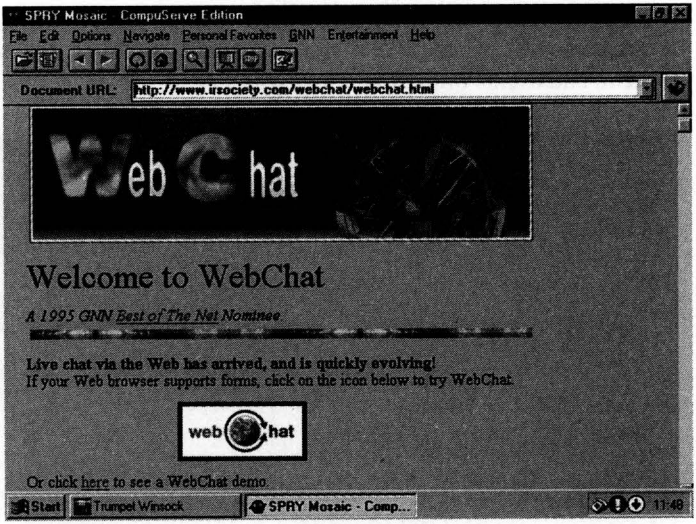
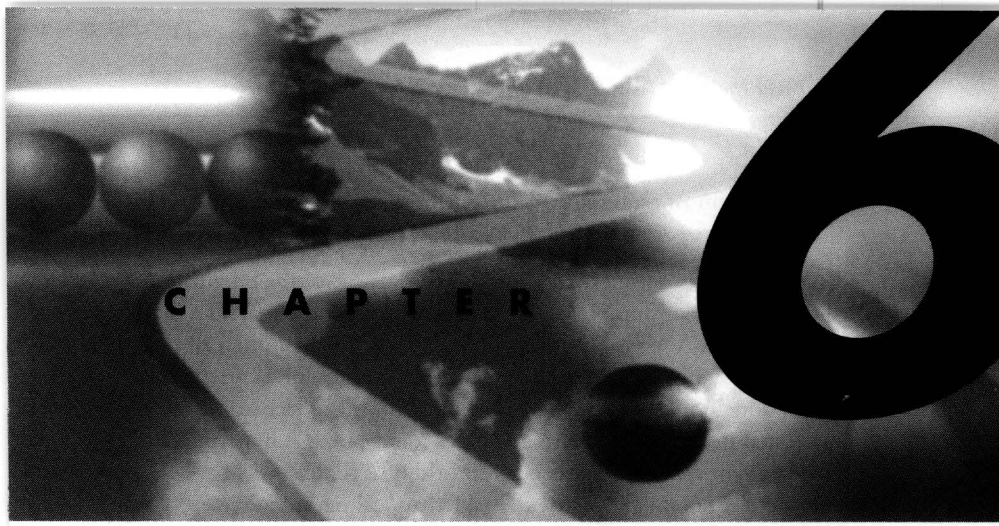


Figure 5.27. *IRC meets the World Wide Web.*

> **Note**
>
> To use WebChat, you need a modem that is capable of at least 9,600bps, with 14,400 or 28,800 offering better performance.

By now you should have come to the realization that with just a WWW browser you can take advantage of nearly everything the Internet has to offer. You can read newsgroups, download files, and even chat with other people in real time. By providing a single, easy-to use interface, the World Wide Web has done more to give people access to the Internet than any other tool.



By Neil Randall

Using the Web for Business

When you look at the World Wide Web today, it's hard to believe that, not very long ago, business activity on the Internet was strictly forbidden. Today, business and commercial sites have grown at a rapid pace. It's become increasingly clear that the business interests will soon take center stage, eclipsing just about everything else in their efforts to use the Web as a promotion or sales tool. Not everyone would suggest that this is a good thing; but whether we like it or not, the Web, like the Internet itself, is very quickly becoming a commercial medium.

A commercial presence is one thing, but whether the Web ever becomes a commercially *driven* entity is the question foremost in many Net-watchers' minds. So far, it hasn't, at least not to the degree that alarm bells ring in the minds of those who fervently hope that it won't. The Web was initiated as a communications medium for the exchange of scientific research, and it remains a vital community, nurturing a range of scholarly endeavors. Its development has been driven by the needs of the academic community, in both its traditional and experimental facets. In meeting these needs, the Web has emerged as both a database service and a multimedia communications tool, because these are

the two foremost requirements for scientific and research organizations.

But the needs of business are different from those of the scientific and academic communities, and it's important to understand a bit about why the Web is becoming such an appealing commercial domain. Because they were already on the Internet for a variety of reasons, including research and development, business became interested in the Web almost as soon as it appeared. A hypermedia environment available to the entire world offered all sorts of commercial potential because it enabled appealing, interactive access. Given that the much-touted, much-maligned, much-misunderstood information superhighway sought to provide precisely this kind of access, as the Web's capabilities became manifest the interests of business grew accordingly.

The race to cash in on the Web began in earnest when Mosaic for X appeared and turned some of the promises of the Web into reality. Businesses started utilizing the Web for purposes such as marketing, customer service, product information, and ordering. Today, commercial activity on the Web has increased to the point where new companies are adding Web pages daily, and a What's New page for commercial sites (`http://www.directory.net/dir/whats-new.html`) is being updated almost as often as NCSA's famous What's New page for the entire Web. Put simply, business activity on the Web is exploding.

Given the current efforts and successes at making the Web fully secure for the transmission of such things as classified data or credit-card information, it is inevitable that the Web will evolve into a commercially driven medium. Nobody knows exactly what this will mean for the structure of the information environment; but keep in mind that in the world of business and commerce, shared research and development is rarely allowed, let alone encouraged. This is not to label business as the enemy of Web development; it's simply to recognize that the priorities of business and academia are essentially different from one another.

Obviously, we'll just have to wait and see. Just as obviously, you'll discover as you navigate the growing number of commercial sites that we won't have to wait very long. My own view of these developments is an optimistic one, a feeling I share with several long-time Internetters with whom I've talked. The scenario goes

like this: Commercial activity will go a long way toward paying for the Internet, making it less costly for the rest of us, and the explosion of interest this activity causes will assist rather than hinder the growth of the Net as a viable global-communications tool. But then again, I generally believe in a *Star Trek* future rather than a *Neuromancer* one, so you can judge this prognostication however you see fit.

Finding Business and Commercial Sites on the Web

With all the commercial activity on the Web, what's needed is a Web page that provides the links necessary to access the main players. There are other ways of finding Web information than by accessing a central directory page, but using the Web's search tools shouldn't be necessary for something this obvious. And besides, it's often more useful to browse than to search, especially if you don't know exactly what you're looking for.

Fortunately, a few pages have appeared to help you find the business information you need. Others exist in addition to the ones described here, but the pages listed here are easily accessible and reasonably well organized.

List of Commercial Services on the Web (and Net)

Open Market's Commercial Sites Index (`http://www.directory.net/`) serves an invaluable function. Here, on a series of alphabetically organized HTML pages, you will find thousands of links to businesses, business services, nonprofit organizations, and sites that gather several businesses together. For a businessperson investigating how other companies are using the Net, this is an invaluable page from which to start.

Interesting Business Sites on the Web

An aptly named collection of links out of Rensselaer Polytechnic Institute (`http://www.rpi.edu/~okeefe/business.html`),

Interesting Business Sites on the Web doesn't pretend to be all-inclusive.

Spry City

Another page directing Web users to business sites is Spry, Inc.'s Spry City (`http://www.spry.com/sp_city/sp_city.html`). A completely redesigned home page for the old NetAccess site, Spry City features listings of everything from education sites to art and theater sites, but its business area remains strong.

Special-Interest Business Sites

This section looks at the growing number of Web pages aimed at specialized markets. Here we see the World Wide Web being used as an inexpensive means for small businesses to make products known to more potential buyers than would be possible in any other way besides full-scale, mass-media advertising. (And in mass-media advertising, there's no guarantee that anyone will actually pay attention.)

Are companies now using the Net for advertising, an activity once frowned upon by the Internet community at large? Yes, blatantly. But while these Web pages suggest the possibility that one day the Net will be saturated with the electronic version of direct-mail advertising, there is no pressure for anyone to access these sites. If you wish, you can avoid them completely. Yet if even one of them fulfills a hobby or gift-buying need, you'll be glad you have access to them.

Auto Pages of Internet

The worlds of cars and computers have a lot in common. Car owners are just as critical of other people's machines as computer owners are, and both groups want nothing less than the best, the fastest, and the most technologically advanced. They also want the machine that will afford them the most prestige. However, there is at least one fundamental difference: computer owners don't routinely polish up their old Altairs and Apple IIs and parade them around at antique computer shows to the oohs and ahs of admiring onlookers.

The Auto Pages of Internet home page (`http://www.clark.net/pub/networx/autopage/autopage.html`) offers a place on the Web for people to advertise their classic or exotic cars and motorcycles for sale. The page has links to Exotic Cars and Classic Cars, and links further down provide access to car dealers and manufacturers, articles and reviews of interest, and pages explaining how to advertise on the Auto Pages Web site (and even how to earn a commission by soliciting advertising). As a business, this is the equivalent of a specialty buy-and-sell paper, and the fact that it's so focused in scope is precisely what makes it interesting. Hobbyists and collectors will find themselves accessing the page regularly.

InContext Systems

InContext Systems is a Canadian firm that produces software for document creation (including Web design). The firm hired a creative advertising agency to give their Web site maximum impact. The result is a multi-page, in-depth site that combines the design quality of *Wired* magazine with a genuine attention to usability. Despite its graphical orientation, the site doesn't take much longer to retrieve than many other sites, because the graphics have been limited to a sensible size (including 8-bit rather than 16-bit versions) whenever possible. The home page, at `http://www.InContext.ca/`, demonstrates the site's creative design approach.

Arctic Adventours

Given the fact that the tourism industry caters to people who are interested in travel and who often travel to exotic places around the globe, the Internet seems a logical venue for posting materials about travel. So far a few tour operators have jumped on the bandwagon, including Norway's Arctic Adventours (`http://www.oslonett.no/data/adv/AA/AA.html`).

Large Corporations on the Web

Web use by large corporations is a topic of considerable interest as we approach the second half of the '90s. Large businesses today see the Net as a very real tool for attracting, serving, and maintaining

customers and clients. Predictably, however, they're approaching the Net very cautiously, partly because of security issues and partly because no concrete figures exist to suggest how many people can be reached this way. Because of both concerns, the tendency is to direct funding elsewhere—and in corporations, an unfunded project is a nonexistent project.

This is not to suggest that corporations have not already begun some major online activities. A quick scan of the Commercial Sites Index demonstrates that large companies are beginning to assert an Internet presence. While many of these are computer companies (such as Digital Equipment, Hewlett-Packard, and Silicon Graphics), other types of businesses are coming onto the Web as well.

If corporate America determines that a Net presence can be profitable, we can expect the Web to experience an explosion of big-business activity—to the extent that the balance of Internet activity will be swung in business's favor. This is something that the larger Internet community is extremely wary of.

CommerceNet

CommerceNet (`http://www.commerce.net/`) is among the more significant business sites on the World Wide Web, although it is perhaps not as important as it was before the advent of security-capable commercial browsers and servers. Page through CommerceNet's directories and you'll find some Fortune 500 giants, and although the site hasn't developed as quickly as was first expected, it can't be ignored as an indication of things to come.

Canadian Airlines International

The Canadian Airlines International site on the Web (`http://www.CdnAir.CA/`) demonstrates more of the Web's promise, but it also shows how far the Net still has to go to be an effective business tool. Here we have access to a good range of useful information about the airline, including flight and departure schedules. Eventually we'll be able to use this site to order airline tickets and to make rental car, hotel, and tour reservations.

Lockheed Martin Missiles & Space

Lockheed Martin Missiles & Space (`http://www.lmsc.lockheed.com/`) specializes in space systems, missiles, and other high-tech products. The company earns its income primarily through Defense Department contracts (the civilian space-missile market is extremely limited these days), and that probably has a lot to do with why the home page offers an immediate link to the Public Information Office and transcriptions of recent press releases. One imagines that Lockheed spends a fair amount of time and money on public relations, and the Web is a useful tool in this regard.

Bank of America

A participant in the CommerceNet initiative, Bank of America has hit the Web with a series of pages that show significant potential. The home page (`http://www.bankamerica.com/`) consists of a huge clickable map in the form of a large, colorful logo. It offers no concession to text-only users while it clearly demonstrates the financial activities that will be possible from this site in the near future.

Hewlett-Packard

Hewlett-Packard, like several other computer companies, has developed an extensive corporate site on the Web, one that clearly demonstrates the Web's potential in the areas of technical support and customer service. The HP SupportLine home page (`http://support.mayfield.hp.com:80/support/`) loads with the large imagemap graphic that contains the buttons you need to traverse the site. This map is clearly and colorfully designed and extremely easy to understand, and it fits with the theme of the HP access pages throughout the site. For modem users, four of the items are accessible from the links at the bottom of the page.

Digital Equipment

Very similar in scope to Hewlett-Packard's site is Digital Equipment's extensive and highly useful area (`http://www.digital.com`). Like HP, Digital leads off on its home page with a clickable imagemap, a somewhat overlarge graphic that

continues Digital's science-fiction theme from their previous—and much more graphical—Web offering. From this graphic you can navigate anywhere on Digital's site, and there's a very great deal to see.

Compaq Computer Corporation

It's hardly surprising that the computer companies seem to be leading the way in using the Web to present information about products and customer service, and it's always valuable to look at what these companies are doing if you want to see some of the Web's potential. One of the latest to make their way to the Web is Compaq, whose home page at `http://www.compaq.com` is available in either a full-graphics (extremely modem-hostile) or a full-text version, with nothing left out of the latter. From here you can get information about individual products or product lines, and you can access the customer-service area as well.

Toronto-Dominion Bank

One of the first Canadian banks on the World Wide Web, the Toronto-Dominion Bank offers a series of pages (`http://www.tdbank.ca/tdbank/`). With links to a series of investment services, RRSP details, downloadable software, and even a library, the home page demonstrates the kind of commitment necessary for a business to make the Web work for them.

Dun & Bradstreet

Dun & Bradstreet is a venerable presence in the financial-information community, and the fact that it has established pages on the Web suggests that it is aware of the Net's potential for financial organizations. As is evident from the company's home page (`http://www.dbisna.com/`), this site includes links to several important resources for financial information and services.

Federal Express

Located at `http://www.fedex.com`, the Federal Express pages are part of the CommerceNet initiative. At this point, it's not possible to call FedEx for a package pick-up over the Web, but it's definitely possible to track a package that you've already sent with them. The home page shows the somewhat meager offerings of

this page, which primarily break down to a what's-new page and a shipment-tracking page. If you're interested, you can check out the company's availability as well, but you could do that by simply calling their toll-free phone numbers instead. Even the what's-new page is less than wonderful, consisting primarily of press releases at this stage in its development.

Industrial Malls

Large companies can afford to establish their own Internet connections. Small companies, for the most part, cannot. For that reason, we're seeing an increasing number of "industrial malls" coming into operation on the World Wide Web. Like a real industrial mall, the principle behind these "e-malls" is that one company owns and maintains the structure, collecting rent from the tenants and providing them a space. Rather than a building, of course, the e-mall landlord owns and maintains a full Internet connection, renting disk space and bandwidth to the tenants for a setup fee, a monthly fee, and, in some cases, a page-design fee. The possibilities are varied, depending on the site.

The advantage for the tenants is that they obtain an Internet presence without the significant cost in both equipment and labor of installing their own connections. They don't have to worry about system upgrades, hard-disk failures, UNIX arcana, or anything else. They just assert their presence, pay for the amount of e-space they take up, and display their wares to 20 million Internet users. The disadvantages are that they don't have the freedom to develop full Internet integration into their company's daily activities, and they don't have unique URL addresses (although this isn't always true). But because most Web users point-and-click their way onto a site rather than type in the actual URL, this latter point probably doesn't matter that much.

Expect industrial malls to increase in both number and quality. This is an obvious entry point onto the Web for a great many businesses, and not just small ones.

Downtown Anywhere

Downtown Anywhere (`http://www.awa.com`) is "conveniently located in central cyberspace." It's structured according to the town metaphor, with a main street, a library and newsstand, and

just about everything else you'd find in a downtown. The idea behind the site is to collect a wide variety of businesses and services in one spot, creating not just an industrial mall but a virtual town, and the early development of this site ought to lend some credibility to the possibility of future success.

BizNet Technologies

Unlike Downtown Anywhere, BizNet Technologies (`http://www.biznet.com.blacksburg.va.us/`) has organized its tenants around the metaphor of the shopping mall. The concepts are similar, but when the metaphors are fully developed, the two sites will end up with very different atmospheres. So far, however, the sites appear alike, but this is hardly surprising; interface designers have always been much better at coming up with metaphors than developing them fully. Still, the shopping mall is a metaphor you'll run into frequently on your Web travels, so it's worth exploring.

NetMarket

Among industrial malls on the Web, NetMarket (`http://www.netmarket.com`) is unique. Not only is it designed to house a variety of businesses (which isn't unique at all), it is also structured so that you open an account that covers all the offerings in the mall itself. Establish the account, and you can go shopping inside any of NetMarket's stores. This is an extremely interesting idea because it encourages e-shoppers to stay in that particular mall for all their shopping needs. Rather than establish accounts with each individual store, you only need one in order to begin shopping. (This is potentially dangerous from a personal-finance standpoint, of course, but such is the nature of credit-card shopping.)

The Internet Plaza

One of a growing number of virtual malls on the Web, the Internet Plaza offers an attractive opening imagemap (at `http://plaza.xor.com/`) that divides the service into the standard business areas of a town. Included here are the leasing office, which gives you information about how to get onto this service, and a Monthly Feature, which encourages users to return to the Plaza at least once per month.

The Internet Shopping Network

The Home Shopping Network has been such a success on cable television that it comes as no surprise to see a version offered over the Internet. There's no question which version is superior. Instead of staring at your screen while hunks of cheap jewelry and commemorative plaques work their way past you, with the Internet Shopping Network (`http://www.internet.net/`) you can move straight to your chosen interest area and see what the service has to offer.

internetMCI

As if Internet "founder" Vint Cerf needed any more pats on the back ("founder" is in quotations because Cerf wouldn't call himself that), his new internetMCI (`http://www.internetmci.com/`) service has all the makings of a superb piece of Net-based business.

OfficeMax

One of the stores that sells merchandise from marketplaceMCI is the office-equipment retailer OfficeMax. Its home page and all subsequent pages are consistently and cleanly designed. One of the selections from this page leads to product selection. This page is at `https://www2.pcy.mci.net/market/omax/html/2100.html`.

Business Services on the Web

As businesses develop a Web presence, so do the corresponding business-support services. One of the most prevalent services, as you might expect, are the Internet site providers; but I've foregone a discussion of those in favor of two less obvious examples. The following two sites demonstrate that the nature of Web-based business services is yet to be determined, but eventually we can expect the same range of services over the Net that we have in the non-Net world. There's one problem: The Net as it now exists is extremely public, and many business-service companies project an image that suggests they deal with a very elite (that is, very big business) clientele.

Capital One

Much of the current focus of business on the Web is on the possibility of paying for merchandise by credit card. Not long ago, it wasn't a good idea to send your credit-card information over the Web, because lack of security meant the information could be stolen by just about anyone with the know-how. With the advent of servers offering data security, however, such as the well-known Netscape Netsite server, the possibility of Web-based credit-card purchases now exists, and it's not likely to go away.

The problem is, not everyone has a credit card. So it was only a matter of time that someone would make it possible to use the Web to obtain a card, in order to make credit-card purchase available to as many Web users as possible. That's the role of Capital One, whose home page is at `https://www.capital1.com/CapitalOne/c1-application.html`. From this page you can apply for a Visa card by using secured fill-in forms.

PAWWS

PAWWS stands for Portfolio Accounting World Wide from Security APL, but that's not important. Much more interesting is the fact that PAWWS offers a set of useful utilities and services over the Web that are designed to help you with money management. Another of the growing number of secure Web sites, PAWWS (`https://pawws.secapl.com/`) is an investor service with a number of interesting and appealing features.

You can open different kinds of accounts with PAWWS, depending on what you want to do. (No, it's not free.) When you have your account and password, you log in to The Source information service to make use of PAWWS's services. This log-in is seamless across the Web; you don't see a separate Telnet screen or anything of the sort.

Quote.Com

If you're continually reviewing your financial position and you need up-to-the-minute details about your portfolio, you'll probably find Quote.Com (`http://www.quote.com/`) an indispensable resource. Appearing on the Web in the last quarter of 1994, Quote.Com became an immediate sensation because of its range of services and because it was among the first services on the

Web that wasn't free. You can get limited access to the full-service line-up for no charge, but if you want to get serious about tracking financial activity over the Web, you pay monthly.

Corporate Agents, Inc.

Corporate Agents (`http://www.corporate.com/`) is an example of a business service designed to appeal to small businesses or individuals wanting to start or expand a business. The purpose of the company is to help its clients incorporate. Incorporating is a good idea for many businesses for a variety of reasons, yet it's a process that, for the uninitiated, seems awash in legal technicalities. What makes Corporate Agents's site an especially clever one is that it uses the democratizing effect of the Internet as a way of illustrating its point that incorporating is neither all that difficult nor necessarily all that expensive. In other words, it's a service that seems especially suited to the Net itself, which has thousands of small-business or would-be small-business users.

Graphics Visualization and Usability Center

Although sparsely developed at this stage, we can expect more from the Graphics Visualization and Usability Center (`http://www.cc.gatech.edu/gvu/user_surveys/survey-09-1994/`). We can also expect similar sites to pop up across the Net. What business continually needs is detailed demographic information so that it can track and target potential customers, and because of its chaotic nature, the Internet does not easily yield such information. This lab's home page offers a very brief look at who's using the Net, and although it's only very generally useful, it provides some insights on its own. (The relatively small percentage of users in the 36-50 age range strikes me as extremely odd.)

Municipality-Based Business Pages

We've seen a virtual downtown on the Web, so why not a real one? One subcategory of the industrial mall is the municipality-based collection of business sites, of which several are now appearing on the Web. While it's true that shopping on the Web

doesn't require users to know where they are geographically (that's one of its pluses), the idea behind presenting information about businesses in real communities is that the business dollar is still very much geographically based. In some cases, these municipality-based sites offer travelers a look at what they can expect when they visit that location. The site also shows businesses who their corporate neighbors will be if they move to a certain area.

Keep in mind that one of the most significant municipal tasks is to attract new business. As more and more businesses develop an Internet presence, it makes good sense for municipalities to attract these businesses by demonstrating that the municipality has a strong business environment. That might be a big factor in a firm's decision to move to one location rather than another.

Businesses in Utah

Utah doesn't immediately spring to mind when thinking of major business states, so the Businesses in Utah site (`http://www.utw.com/UtahBusi.html`) makes a great deal of sense. The home page shows that the state's businesses are aware of the Net and have developed at least some Web presence, although some of the explanations could be expanded for more immediate interest. Still, one of the links is to the world-famous WordPerfect Corporation, and this is an obvious place to start browsing.

Quadralay Corporation, Austin, Texas

Some states have taken a far stronger initiative than others in getting the information superhighway up and running, and Texas is one of the most aggressive. Among the most noteworthy Net sites in the state is the one for its capital, Austin (`http://www.quadralay.com/www/Austin/Austin.html`), developed by Quadralay Corporation and sporting some of the most interesting business-related information on the Net.

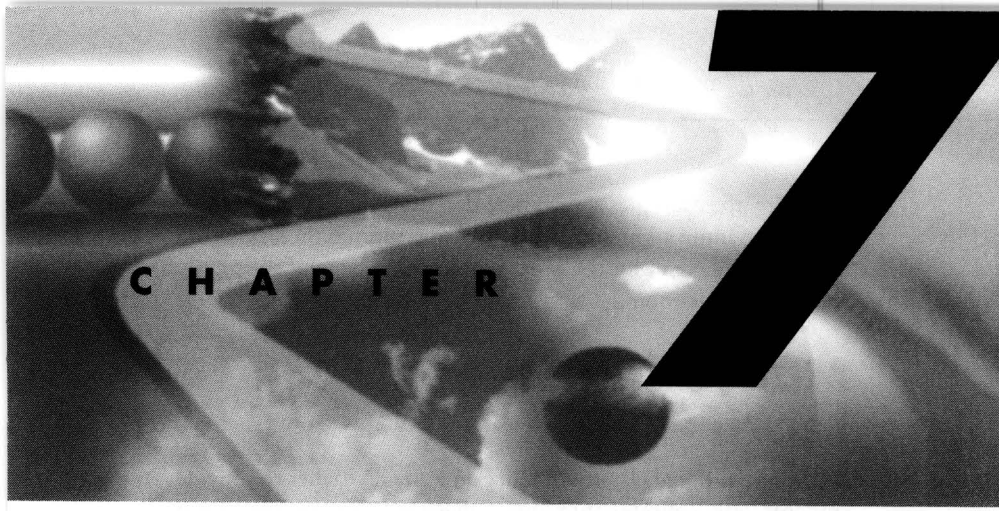
Internet Directory

To give you a head start, I've compiled a small directory to help you explore the business opportunities and ideas that are available on the Web:

- **U.S. Robotics:** World Wide Web home page (`http://www.usr.com`).
- **Advertising Blacklist:** A compendium of advertisers who have misused Net access, compiled by Axel Boldt (`http://math-www.uni-paderborn.de/~axel/blacklist.html`).
- **Advertising Guide:** The Internet Advertising Resource Guide, maintained by Hairong Li, The Missouri School of Journalism; links to a large number of sources of information about Internet advertising, including collections and topics, studies, storefronts, and other information (`http://www.missouri.edu/internet-advertising-guide.html`).
- **Advertising FAQ:** Internet Advertising FAQ, by Strangelove Internet Enterprises (`mailto:interBEX1@intnet.bc.ca`).
- **Advertising/marketing law:** Emphasis on infomercials, home shopping, and direct-response TV; includes intellectual property and telemarketing, by Lewis Rose (`http://www.webcom.com/~lewrose/home.html`).
- **Businesses:** List of Commercial Services on the Web, from Open Market (`http://www.directory.net`).
- **Business/Corporations:** Lists of business and corporations on the Net (`http://www.yahoo.com/Economy/Business/Corporations/`).
- **Business sites:** Interesting Business Sites on the Web, by Bob O'Keefe at the School of Management, Rensselaer Polytechnic Institute (`http://www.rpi.edu/~okeefe/business.html`).
- **Business uses:** Commercial Use (of the Net) Strategies Home Page, by Andrew P. Dinsdale (`http://www.dserv.com/~andrew/business.html`).
- **Canadian Business:** Canadian Internet Business Directory (`http://cibd.com/cibd/CIBDHome.html`).
- **Career Mosaic:** High-tech companies offering career information (`http://www.careermosaic.com/cm/`).
- **Commercial List:** A directory of many commercial services on the Web (`http://www.directory.net`).

- **Commercial Services:** A list of telnet connections to many commercial information services, from The World (`gopher://gopher.std.com:70/11/Commercial`).
- **Computer+Communications:** Computer and Communication Company Sites on the Web, by James E. (Jed) Donnelley (`http://www-atp.llnl.gov/companies.html`).
- **Entrepreneurs:** Useful business information and services for entrepreneurs (`http://sashimi.wwa.com/~notime/eotw/EOTW.html`).
- **FECRS:** Fairfax Electronic Commerce Resource Center; Continuous Acquisition Lifecycle Support (CALS); enterprise integration, electronic commerce and business processing, re-engineering (`http://www.ecrc.gmu.edu/index.html`).
- **Hermes:** Research project on the commercial uses of the World Wide Web (`http://www.umich.edu/~sgupta/hermes.htm`).
- **IBC:** Internet Business Center; a World Wide Web server for information specifically related to business use of the Internet (`http://www.tig.com/IBC/`).
- **IBD:** Internet Business Directory; product/service information (`http://ibd.ar.com`).
- **InterBEX:** Business Exchange; selective content oriented business information (`mailto:interBEX-index@intnet.bc.ca`).
- **InterQuote:** Continuously updating stock market information service (`http://wwa.com/~quote`).
- **Internet info:** Compiles information on the commercial activity on the Internet (`mailto:info@internetinfo.com`).
- **Marketing/CMEs:** Marketing in Computer-Mediated Environments Home Page, from Owen Graduate School of Management, Vanderbilt University, Nashville, TN, USA (`http://colette.ogsm.vanderbilt.edu`).
- **MARTECH:** Discuss MARketing with TECHnology tools, such as marketing via the Internet (`mailto:LISTSERV@cscns.com` Body: `subscribe MARTECH` *`YOUR NAME`*).

- **MESCH:** The Multi-WAIS Engine for Searching Commercial Hosts, enables you to search the databases of several commercial WWW providers (`http://www.ip.net/cgi-bin/mesch`).
- **Publications:** Print Publications Related to Business Use of the Internet, from Tenagra (`http://arganet.tenagra.com/Tenagra/books.html`).
- **Stock Quotes:** QuoteCom, a service dedicated to providing financial market data to Internet users (`http://www.quote.com`).
- **Thomas Ho:** Favorite Electronic Commerce WWW resources, includes information sources, links to articles, economic development, service/presence providers (`http://www.engr.iupui.edu/~ho/interests/commmenu.html`).
- **What's New/Commerce:** What is new in commercial services on the Web (`http://www.directory.net/dir/whats-new.html`).
- **Shop D Net:** A list of virtual marketplaces, from Blake and Associates, Internet Marketing Consultants (`http://www.neosoft.com/citylink/blake/malls.html`).
- **Digital's Emall:** Digital Equipment Corporation's Electronic Shopping Mall (`http://www.service.digital.com/html/emall.html`).
- **eMall:** WWW shopping and information (`http://eMall.com`).
- **IBC:** Internet Business Connection, an electronic shopping mall and a service for companies that would like to promote their products or services on the Internet (`http://www.charm.net/~ibc`).
- **Internet Mall:** Shopping on the Information Highway—a monthly list of commercial services available via the Internet (`ftp://netcom.com/pub/Guides/`).



By John December

Education, Scholarship, and Research

Historically, one of the strengths of computer networks has been the ability to bring people together. Educators such as those at the Open University in the United Kingdom and the New School for Social Research in the United States have long recognized this and have used computer networks for education. While scholars still debate the value and proper application of online learning, the Web creates information spaces and communication opportunities that represent a wide range of activities.

This chapter presents some examples of how the Web can be used for education and to awaken students' minds to the excitement of learning. Other examples show how educators have created webs to reflect their activities, projects, and resources.

Next, this chapter surveys how scholars can use the Web to share ideas, collaborate on research, and develop materials for their students. Like many information systems before it, the Web has its limitations and weaknesses. A primary weakness is that there is still relatively little educational material available through the Web.

However, the examples shown here demonstrate a remarkable richness in innovation and creativity. By exploring these, you can develop enthusiasm for the process of learning beyond the physical walls of the classroom.

Motivating Students to Learn

While a traditional classroom relies on a single teacher to provide students with a glimpse into knowledge, the Web can offer direct connections between knowledge producers and students. The following example describes the JASON project, an effort to involve students in exploration. It is just one illustration of how many educators can collaborate to create an online learning environment that extends from the classroom to the world.

In 1985, Dr. Robert D. Ballard (now Director of the Woods Hole Oceanographic Institution's Center for Marine Exploration) and a research team discovered the wreck of the HMS *Titanic* on the floor of the North Atlantic Ocean. In order to photograph the vessel's interior, the team designed a submersible robot named JASON. In 1989, due to the success of JASON and the curiosity of school children who wanted to know how his team discovered the Titanic, Dr. Ballard founded the JASON project. In 1990, the JASON Foundation for Education was formed "to excite and engage students in science and technology and to motivate and train their teachers."

In the JASON Web (`http://seawifs.gsfc.nasa.gov/scripts/JASON.html`), Dr. Robert Ballard talks about the project's purpose: "[T]o excite young people in the fields of science and engineering by involving them in the excitement that we as scientists and engineers enjoy...[to] involve them in moments of discovery...[to] take young people to interesting research sites and let them participate in live exploration" (`http://seawifs.gsfc.nasa.gov/JASON/JASON6/ballard_purpose.au`). One feature of the JASON project is *telepresence*, in which scientists, using remote sensing devices, involve others in the process of discovery. The JASON Project home page serves as a clearinghouse for information about the project, as well as tutorials and information for participants.

Schools on the Web

While specific projects such as JASON demonstrate how the Web can be used to support educational projects, other applications of the Web show how schools can build webs to provide information to their own students and teachers, as well as to connect their site to the larger world of the Web.

Although electronic mail, real-time text conferencing, and online tutorials have been used in the education community for several years, the Web brings a unique aspect to these online efforts by helping educators create information spaces that present the "face" of a school to anyone on the Web who ventures in for a visit. This section describes several school Webs and surveys the kinds of information that have been created.

Hillside Elementary School

Hillside Elementary School is located in Cottage Grove, Minnesota, in the southeast section of the Minneapolis-St. Paul area. In March 1994, sixth-grade students at the school began work on their own Web, as part of a joint project between the University of Minnesota's College of Education and Hillside. The Hillside home page is at `http://hillside.coled.umn.edu/`.

The Virginia L. Murray Elementary School

The teachers at Virginia L. Murray Elementary school in Ivy, Virginia, (`http://pen1.pen.k12.va.us:80/Anthology/Div/Albemarle/Schools/MurrayElem/`) worked with a nearby college of education to develop a Web server. Working with the Curry School of Education at the University of Virginia, along with a grant from Albemarle County, the Parent-Teacher Organization, and money from the school's budget, the school established an Internet connection in February 1994. The home page contains links to class pages and the library, as well as local resources such as a Mosaic tutorial written by a graduate student in the Curry School of Education and a tutorial named "How Light Works," written for fourth- and fifth-grade students by Theresa McMurdo and Jason Mitchell. By providing links to local sources, the

Murray school can share resources that other schools may find valuable. By linking to resources on the Web, the Murray school creates relationships beyond its own walls.

Thomas Jefferson High School for Science and Technology

Thomas Jefferson High School for Science and Technology in Alexandria, Virginia, was founded in 1984 as a special magnet school (a school that receives a special designation within a school district for excellence in a range of subjects). Although students at Thomas Jefferson excel at the school's offerings in science and technology, they share a wide variety of interests, and these interests are reflected in their web (`http://boom.tjhsst.edu`).

Claremont High School

Claremont High School (`http://www.cusd.claremont.edu/`) in Claremont, California, is another high school with a web. The web contains links to information and resources at Claremont High School, such as links to resources related to its academic departments, information resources about the Internet, and reports about the web server. Like the Thomas Jefferson web, the Claremont web provides a mix of resources and links that help students at the local school make sense of the Internet as well as locate information to support their education at the school.

Patch American High School

Patch American High School (`http://192.253.114.31/`), located in Vaihingen, a small section of Stuttgart, Germany, provides education to family members of the United States European Command (US EUCOM). The school's Web server and other technology programs are part of the U.S. Department of Defense's Dependents Schools Program, offering education to more than 100,000 students on U.S. military bases in 19 countries worldwide. The Patch American High School web was the first high school web in Europe and offers a detailed look at how the Web can support education, help students, and create an online information system to help learning and inform the general Web public.

Patch High School's web demonstrates how online information can give students a chance to learn multimedia skills, share information, collaborate with other students and schools, and learn more about their community's place in history. Part of the power of a web such as Patch's is in how its links can make connections that serve as jumping-off points for further learning and collaboration. For example, the Patch web includes links to "partner schools," such as the Realschule Renningen school's home page, as well as alumni of Department of Defense Dependent Schools. Thus, the web that the students, teachers, and administrators create is not necessarily the full body of knowledge that the students study, but rather an information system that helps make public relationships and projects a part of the process of learning.

Smoky Hill High School

Smoky Hill High School is located in Aurora, Colorado. Smoky Hill's web (`http://smokywww.ccsd.k12.co.us/`) has particular strength in its assortment of student-developed publishing online. The *Smoky Hill Express* student newspaper offers a detailed look at school events, news, sports, and student opinions and viewpoints. The students also put together a newsletter, *Smoky Hill Signals*, which gives a detailed look at school activities and news, as well as announcements of upcoming events (e.g., the "Principal's Coffee," a time for students to meet informally with the principal of the school). There is also a Technology Newsletter for the school, surveying the user of computers, the Internet, and lectures and computer labs.

Community Colleges

While the elementary and high school webs described in the preceding sections provide information for students and educators located at a single campus, other academic institutions serve a more dispersed and diverse student population. One such example is the Maricopa Community College District in Arizona, the second-largest, multi-college community-college system in the United States. Established in 1962, Maricopa serves the needs of a varied student population with an average age of 30, of whom 80 percent are employed—50 percent with full-time jobs. Maricopa

schools offered more than 180,000 credit hours during the 1993-94 academic year. This student population requires high-quality, relevant education that can flexibly help them succeed academically while maintaining busy lifestyles.

The Maricopa Center for Learning and Instruction (MCLI) operates a web that provides a set of links, bringing together information to support its active academic community and linking together the Gophers and other information servers that individual institutions within the Maricopa Community College District operate. The Maricopa web links offices, departments, and campuses within the district and has been recognized as a model for "motivating, infusing, and promoting innovation and change in the community college environment" (`http://www.mcli.dist.maricopa.edu/`). CAUSE, the association for managing and using information technology in higher education, and Novell, Inc., presented Maricopa with the 1993 CAUSE Award for Excellence in Campus Networking, citing Maricopa's "exemplary campus-wide network planning, management, and accessibility" (`gopher://cause-gopher.colorado.edu/00/awards/networking/1993-net-award-winners.txt`). MCLI's home page is at `http://www.mcli.dist.maricopa.edu/`.

Colleges and Universities

The number of colleges and universities with home pages is large and growing quickly. As of August 1994, Mike Conlon's page of American Universities at `http://www.clas.ufl.edu/CLAS/american-universities.html` has more than 480 entries, and Christina DeMello's page of American and International colleges at `http://www.mit.edu:8001/people/cdemello/univ.html` lists more than 1,000 college-level webs worldwide. This section focuses on selected college course material created for the Web.

Online Course Information

The University of Texas at Austin maintains a collection of pointers to course material (much of it college-level) at `http://www.utexas.edu/world/instruction/index.html`. The offerings include material in more than 42 subjects, including Anatomy, Archaeology, Architecture, Art and Art History, Astronomy,

Biochemistry, Biology and Botany, Chemical Engineering, Chemistry, Communication, Computer Science, Finance, History, Language Lab, Management Information Systems, Mathematics, Medicine, Nuclear Engineering and Engineering Physics, Physics, Psychology, and Religious Studies.

A Management Information Systems Course

Another example of a course web is Brian Butler's undergraduate Management Information Systems course that was taught in the summer of 1994 at Carnegie Mellon University (`http://www.gsia.cmu.edu/bb26/70-451/`). This page links the student to a variety of information, not just to the course outline and the syllabus and schedule, but to final exam study hints, lecture notes, and course readings. The instructor also provided links to assignment questions, with the answers provided after the students turn in the assignment. The exam, study questions, and assignment solutions also contain links to the relevant lecture notes.

A Composition Lab and Course

The Computer Writing and Research Lab (CWRL) in the Division of Rhetoric and Composition at the University of Texas at Austin provides a view into how educators can create a web of information surrounding a particular area of teaching. In the case of the Writing and Research Lab, of course, student composition skills are the focus. CRWL's home page (`http://www.en.utexas.edu/`) offers a view into this information structure. The lab's web is organized around multiple views—from student-centered resources (such as online writing dictionaries and style guides) to instructor resources (hypertexts and hypermedia information, as well as online courses and syllabi). The lab also publishes a journal, *The Electronic Journal for Computer Writing, Rhetoric and Literature,* and provides links to a large collection of completed student projects created as a result of classes at the CWRL.

Tutorial Modules

In addition to information that supports an educational institution or a particular course, there are many webs that contain detailed tutorials and learning materials. These webs delve into very specific topics to help students grasp a concept or learn information. Unlike the course webs described previously in this chapter, these tutorial modules are examples of the Web being used to teach students particular content.

The Lawrence Berkeley Laboratory in California, for example, in work sponsored by John Cavallini of the U.S. Dept. of Energy's Energy Research Division, Office of Scientific Computing, has created a virtual frog that can be dissected online. This online "frog" was created as part of the Whole Frog Project, which provides high-school biology students a tool for exploring a frog's anatomy using high-resolution MRI imaging and 3-D surface and volume rendering software. As a result of this work, the project has created not only a useful tool but also has demonstrated the value of computer-based 3-D visualization and whole-body, 3-D imaging as a curriculum tool. The Whole Frog Project home page, at `http://george.lbl.gov/ITG.hm.pg.docs/Whole.Frog/Whole.Frog.html`, links into a preview of the Frog Dissection Kit as well as tutorials.

Educational Resources

In addition to webs that support information for and about education offered at schools, a wide variety of online resources is available to support educators. In this section, you'll explore some major collections.

Canada's SchoolNet

Seldom does an entire country have as bold an initiative as Canada's: to link all of Canada's more than 16,000 schools to the Internet as quickly as possible. SchoolNet is the name for this project, and its home page is at `http://SchoolNet.Carleton.ca/english`.

The United States Department of Education

The U.S. Department of Education's web (`http://www.ed.gov/`) offers to educators a wide variety of administrative and resource information. The government information (such as links to administrative information about the Department, greetings from the current Secretary, and mission statements) provides educators with current background information regarding current national educational goals.

AskERIC K-12 Information

AskERIC (`http://eryx.syr.edu/Main.html`) is a service providing information for K-12 educators. Part of the ERIC (Educational Resources Information Center) Clearinghouse on Information and Technology, AskERIC is a project funded by the U.S. Department of Education.

Based at Syracuse University and sponsored by the schools of Information Studies and Education, AskERIC's Virtual Library connects teachers to resources through a variety of online means (e-mail, FTP, and Gopher, as well as the Web). AskERIC also provides connections to Network Information Specialists (NIS), who can answer education questions from K-12 staff.

The DeweyWeb

Like AskERIC, the DeweyWeb (`http://ics.soe.umich.edu/`) at the University of Michigan is a project to both provide information and facilitate communication. DeweyWeb accomplishes its objectives by providing links to resources as well as a computer-mediated communication activity called Interactive Communications & Simulations (ICS) World Forum.

Web 66

Route 66 was a fabled and well-traveled highway linking Chicago and Los Angeles. Using that storied highway as a metaphor, Web 66, a project of the University of Minnesota's College of Education, helps educators and students set up Internet servers and find resources on the "highway" of the Web. Web 66's home page,

`http://web66.coled.umn.edu/`, includes an "Internet Server Cookbook," which gives instructions on how to set up various Internet servers. Web 66 also offers large collections in the following areas:

- **Resources**

 SharePages: Pages that can be downloaded and used on your own server, such as a search engine meta-page.

 What's New: New information and services on Web 66.

 WWW Schools Registry: An imagemap that guides you to school Web servers throughout the U.S., Canada, and the world. When the Hillside Elementary WWW server went on the Web on March 12, 1994, there were only four K-12 WWW sites. By March 1, 1995, the Web 66 School Registry listed 121 elementary schools and 228 secondary schools, for a total of 349 sites worldwide.

- **Discussion**

 Web 66 Mailing List: A discussion forum for educators using the Web.

 WebMaster Ramblings: A presentation of pointers to the ins and outs of developing and serving information on the Web.

Web 66 is a rich resource for educator information not only for the local (Minnesota) schools, but for all schools. Its imagemap interface to schools on the Web is unique, as is its "cookbook" guidance for creating an Internet server.

Latitude28 Schoolhouse

The Latitude28 Schoolhouse (`http://www.packet.net/school-house/Welcome.html`) home page is a privately sponsored project to help disseminate education materials to students of all ages. The Schoolhouse maintains a database of useful links to educational resources on the Web. The subject areas include art, civics and government, games, mathematics, reading, and science.

The Global Schoolhouse Project

The Global Schoolhouse at `http://k12.cnidr.org/gsh/gshwelcome.html` offers online "classroom" resources linking

students and educators worldwide with a variety of multimedia tools. Funded in part by the National Science Foundation, the project connects students to the Internet and classroom applications that allow them access to resources and communication.

The Texas Education Network

The Texas Education Network, or TENET, is a Texas-based initiative to advance education state wide through a communications infrastructure. TENET's web, `http://www.tenet.edu/`, is organized around a "Central Station," providing links to resources such as K-12+ servers; academic resources; and library, computer-lab, and field-trip information.

Collections of Educational Sites on the Web

Education-Galaxy: EINet Galaxy's collection of resources about education (`http://galaxy.einet.net/galaxy/Social-Sciences/Education.html`).

Education-WWW VL: WWW Virtual Library entry for education (`http://www.w3.org/hypertext/DataSources/bySubject/Education/Overview.html`).

Education-Yahoo: Education section from Yahoo (`http://www.yahoo.com/Education/`).

AskERIC Web: Educational Resources Information Center, Clearinghouse on Information and Technology, federally funded collection of education-related resources (`http://eryx.syr.edu/Main.html`).

Best for ed: A selection of the best of the Internet for educators (`gopher://info.asu.edu/11/asu-cwis/education/other`).

BBN NSN: BBN's National School Network Testbed (`gopher://copernicus.bbn.com`).

CALICO: Computer Assisted Language Instruction Consortium (`mailto:CALICO@Dukemvs.ac.duke.edu`).

CAUSE gopher: Association for managing and using information technology in higher education (`gopher://cause-gopher.Colorado.edu`).

Center/Excellence: Center for Excellence in Education, to help the best U.S. students and teachers keep the United States competitive in science and technology, and to nurture international understanding among potential leaders of many countries (`http://rsi.cee.org`).

Chronicle web: ACADEME THIS WEEK, offers guide to contents of The Chronicle of Higher Education and all Positions Available ads, calendar of events, deadlines for grants, papers, and fellowships; put out every Tuesday at noon EST (`http://chronicle.merit.edu`).

Cisco: Education archive, lists a variety of resources about school connectivity to the Internet as well as resources on the WWW (`http://sunsite.unc.edu/cisco/edu-arch.html`).

COL: Commonwealth of Learning, distance education techniques and associated communications technologies (`http://www.col.org`).

CoVis: Learning Through Collaborative Visualization, Northwestern University (`http://www.covis.nwu.edu`).

Cyberion City: Virtual environment built by schoolchildren (`telnet://guest@michael.ai.mit.edu`).

CTC: Cornell Theory Center Math and Science Gateway, resources in mathematics and science for educators and students in grades 9-12 (`http://www.tc.cornell.edu/Edu/MathSciGateway/index.html`).

DeweyWeb: Facilitating communication between students from all over the world (`http://ics.soe.umich.edu`).

Distance Ed: `ftp://una.hh.lib.umich.edu/inetdirsstacks/disted:ellsworth`.

Dr. E's Compendium: Dr. E's Eclectic Compendium of Electronic Resources for Adult/Distance Education, by J. H. Ellsworth (`ftp://ftp.std.com/pub/je/dre-list.txt`).

NDLC: National (USA) Distance Learning Center (`telnet://ndlc@ndlc.occ.uky.edu`).

Distance Ed DB: A database from the International Centre for Distance Learning at the UK Open University (`mailto:n.ismail@open.ac.uk`).

Distance Ed DB: Contains full text of *Mindweave*, edited by Mason and Kaye (`telnet://icdl@acsvax.open.ac.uk`).

Diversity U: Diversity University, an experiment in interactive learning through Internet (`telnet://moo.du.org:8888`).

EdWeb-CPB: Corporation for Public Broadcasting, an online tutorial on education, technology, school reform, and the Information Highway (`http://k12.cnidr.org:90`).

Education Gopher: Florida Tech's collection of educational resources (`gopher://sci-ed.fit.edu`).

EOS web: Educational Online Sources, pointers for education (`http://www.netspace.org/eos/`).

Educational Technology: The World-Wide Web Virtual Library—Educational Technology (`http://tecfa.unige.ch/info-edu-comp.html`).

Education Technology Initiatives: Higher Education Funding Councils for England, Wales, Scotland, and Northern Ireland now support three major initiatives in the UK that are aimed at improving universities' awareness and use of technological innovations in teaching and learning (`gopher://gopher.csv.warwick.ac.uk/11/remote/other-remote/edu-tech`).

Educator's Email: An Educator's Guide to E-Mail Lists (`ftp://nic.umass.edu/pub/ednet/educatrs.lst`).

Educator's USENET: Ednet Guide to Usenet Newsgroups (`ftp://nic.umass.edu/pub/ednet/edusenet.gde`).

Empire Schoolhouse: Empire Internet Schoolhouse, a selection of K-12 resources, projects, and discussion groups (`gopher://nysernet.org:3000/11/`).

EnviroWeb: A project of the EnviroLink Network; sponsors many online environmental education initiatives (`http://envirolink.org`).

ETB/NLM: Educational Technology Branch (ETB), part of the Lister Hill National Center for Biomedical Communications (LHNCBC) at the National Library of Medicine (NLM) (`http://wwwetb.nlm.nih.gov`).

Exploratorium: A collage of 650 interactive exhibits in the areas of science, art, and human perception (`http://www.exploratorium.edu`).

GENII: Group Exploring the National Information Infrastructure (`http://www.deakin.edu.au/edu/MSEE/GENII/GENII-Home-Page.html`).

GNA: Globewide Network Academy, a nonprofit corporation affiliated with Usenet University; goal is to create a fully accredited online university (`http://uu-nna.mit.edu:8001/uu-gna/index.html`).

High school/Internet: A case study of an east central Florida high school, by Michael Anthony Gallos to the Internet (`ftp://sci-ed.fit.edu/pub/Internet/study/`).

HUB: Mathematics and science education (`http://hub.terc.edu`).

IAT archive: Institute for Academic Technology ftp site (`ftp://gandalf.iat.unc.edu/user/home/anonftp/guides/`).

iCDL: International Centre for Distance Learning, in the United Kingdom on the campus of the Open University, disseminating distance education information worldwide (`http://acs-info.open.ac.uk/info/other/ICDL/ICDL-Facts.html`).

IKE: IBM Kiosk for Education (`gopher://ike.engr.washington.edu`).

IKE Web: IBM Kiosk for Education (`http://ike.engr.washington.edu/ike.html`).

ILT: Institute for Learning Technologies as part of the Columbia University Virtual Information Initiative (`http://www.ilt.tc.columbia.edu`).

ILC-Southampton: Interactive Learning Centre, University of Southampton, United Kingdom (`http://ilc.ecs.soton.ac.uk/welcome.html`).

Internet and Ed: By Noel Estabrook (`ftp://ftp.msu.edu/pub/education/`).

IRD/Educators: Internet Resource Directory for Educators (`ftp://tcet.unt.edu/pub/telecomputing-info/IRD`).

IT Connections: Instructional Technology Connections, by Martin Ryder (`gopher://ccnucd.denver.colorado.edu/h0/UCD/dept/edu/IT/itcon.html`).

JASON: Introduces teachers to the world of telecommunicating (`telnet://topcat.bsc.mass.edu`).

JASON Project web: A journey to the rainforest, caverns, Mayan ruins, and coral reef of Belize (`http://seawifs.gsfc.nasa.gov/JASON/JASON.html`).

Jones Ed Nets: Jones Education Networks (Mind Extension University, Jones Computer Network) (`http://www.meu.edu`).

Kenyon workbook: Workbook for Kenyon's Summer Institute on Academic Information Resources; emphasis on faculty and student exploration of information resources, communication, and collaboration, from Kenyon College, Gambier, Ohio (`ftp://ftp.kenyon.edu/pub/pub/e-pubs/workbook/`).

KidLink: Gopher aimed at 10- to 15-year-olds (`gopher://kids.ccit.duq.edu`).

K-12 List: List of K-12 Internet School Sites, by Gleason Sackman (`http://toons.cc.ndsu.nodak.edu/~sackmann/k12.html`).

K-12 Registry: WWW Schools Registry, from Web66/Hillside Elementary School (`http://hillside.coled.umn.edu/others.html`).

K-12/Armadillo: Annotated directory of K-12 resources from Rice University (`http://chico.rice.edu/armadillo/Rice/K12resources.html`).

K-12 Gopher: CICnet's K-12 Internet gopher (`gopher://gopher.cic.net/11/cicnet-gophers/k12-gopher`).

K-12 Info/CNIDR: Includes global schoolhouse project and Janice's K12 Cyberspace Outpost (`http://k12.cnidr.org`).

K-12 Briarwood: Collection of K-12 resources of the Internet, including a Curriculum Database (`http://www.briarwood.com`).

K-12 NASA/Langley: NASA Langley Research Center's HPCC K-12 Program (`http://k12mac.larc.nasa.gov/hpcck12home.html`).

K-12 NASA/NAS: Pointers to online Educational Resources, by Chris Beaumont (`http://www.nas.nasa.gov/HPCC/K12/edures.html`).

K-12 Web 66: Resources and information to facilitate the introduction of Web technology into K-12 schools (`http://web66.coled.umn.edu`).

Latitude28: Latitude28 Schoolhouse, a privately sponsored project, designed to make educational materials accessible to students of all ages (`http://www.packet.net/schoolhouse/Welcome.html`).

Learning V: Learning Village, Internet access to schools, by National Public Telecomputing Network and Ameritech (`mailto:tmg@nptn.org`).

LRDC: Learning Research and Development Center at the University of Pittsburgh—thinking, knowing, and understanding in and beyond school (`http://www.lrdc.pitt.edu`).

NCSA education: National Center for Supercomputing Applications Education Program Home Page (`http://www.ncsa.uiuc.edu/Edu/EduHome.html`).

Maricopa: Center for Learning and Instruction, Maricopa Community Colleges, Arizona (`http://www.mcli.dist.maricopa.edu`).

MEU BBS: Mind Extension University Bulletin Board System (`telnet://bbs.meu.edu`).

Networking: Networking on the Network, an essay by Phil Agre (`mailto: comserve@vm.its.rpi.edu`; Body: `send Profess Network`).

Networking: Networking on the Network, an essay by Phil Agre (`http://communication.ucsd.edu/pagre/network.html`).

NCET: National Council for Educational Technology Information Service (UK) (`http://datasun.ncet.org.uk`).

OISE Gopher: Ontario Institute for Studies in Education (`gopher://porpoise.oise.on.ca:70`).

Online LC: Mount Allison University's Online Learning Centre—tele-education (`gopher://pringle.mta.ca`).

Plugged In: A nonprofit group dedicated to bringing the educational opportunities created by new technologies to children and families from low-income communities; located in East Palo Alto, California (`http://www.pluggedin.org`).

Primary/Sec: Answers to Commonly Asked Primary and Secondary School Internet User Questions (`ftp://nic.merit.edu/documents/fyi/fyi_22.txt`).

Singapore-Ed: Ministry of Education (MOE), Singapore (`http://www.moe.ac.sg`).

Teacher Education: Society for Technology and Teacher Education (STATE), the University of Virginia, and the University of Houston have collaborated to establish a Teacher Education Server on the Internet (`http://curry.edschool.virginia.edu/teis/`).

TECFA: An academic team active in the field of educational technology at the School of Education and Psychology of the University of Geneva (`http://tecfa.unige.ch/tecfa-overview.html`).

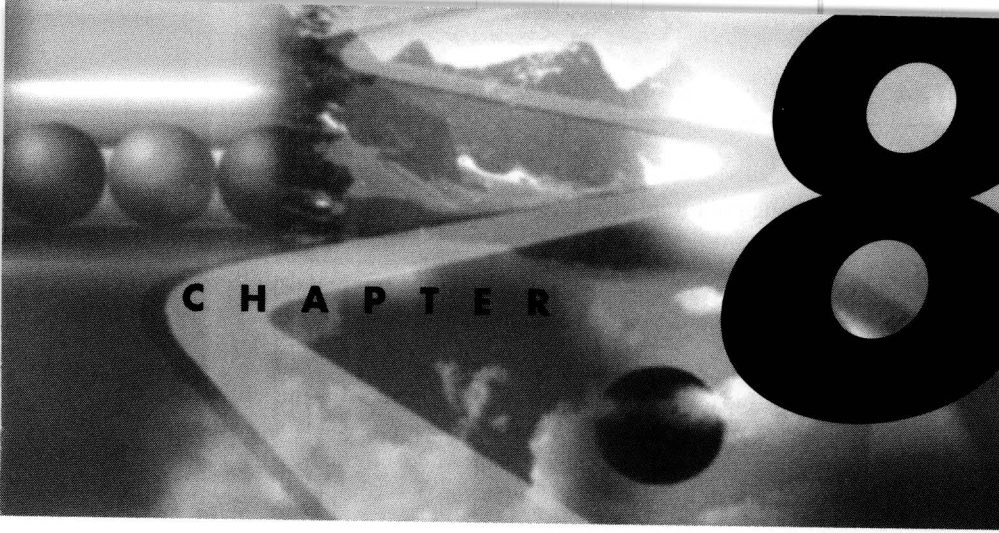
US Dept of Ed gopher: United States Department of Education (`gopher://gopher.ed.gov`).

US Dept of Ed Web: United States Department of Education (`http://www.ed.gov`).

USENET University: An online society of people interested in learning, teaching, or tutoring (`ftp://nic.funet.fi/pub/doc/uu/FAQ`).

VOU: Virtual Online University, an online liberal arts university, using a virtual environment called a VEE (Virtual Education Environment) (`http://core.symnet.net/~VOU/`).

WWW teaching: WWW for instructional use, a collection of course materials, from the University of Texas at Austin (`http://www.utexas.edu/world/instruction/index/html`).



By Wes Tatters

Using the Web at Home

Despite many guidelines dealing with acceptable usage (i.e., using the Internet for research and not strictly entertainment), the Internet has grown to become a veritable electronic playground.

This chapter covers some of the more "fun" resources available on the Internet. You'll read about the following topics:

- Games and other stuff
- Online news and magazines
- Education on the Internet
- Study and research

Games

"When you're tired of the Internet, you're tired of life," to plagiarize an overused quote. While saying such a thing may at first sound a bit trite, when you look at what the Internet has to offer, it isn't far from the truth. In the future, this same saying will probably become even more appropriate when the promised delivery of live television over the Net becomes a practical reality.

But enough of future dreams, what you want to know is what's available now!

Before looking at games you can play on the Internet, let's look at some of the games you can download from the Internet.

Without a doubt, the biggest software growth industry on the Internet—apart from writing WWW navigators—is the writing of shareware and public-domain computer games. You would be very hard-pressed to locate an FTP site anywhere on the Internet that doesn't have at least one directory devoted to computer gaming.

Major Game-Related FTP Sites

To cater to this growing need, a number of FTP sites maintain archives containing a wide assortment of both DOS- and Windows-based computer games. These sites include these DOS game archives:

```
ftp.cdrom.com/pub/games
ftp.uml.edu/msdos/games
```

and these Windows game archives:

```
ftp.minash.edu.au/pub/win3/games
ftp.cica.indiana.edu/pub/pc/win3/games
```

In these archives you can find copies of public-domain and shareware games, plus demonstration versions of many popular commercial games. Although these sites contain a large number of games, many other sites on the Internet also contain various files—some dedicated to specific games and others holding more general archives.

To help you locate these sites, the best place to start is the World Wide Web, and more specifically, a Web site called the Games Domain. This Web site has been designed to provide easy access to every Internet resource related to computer games. The links it provides include access to all of the major FTP sites, WWW servers for many commercial games, newsgroups, gaming FAQs, and one-click downloading of many shareware and public-domain games. The home page for the Games Domain is `http://wcl-rc.bham.ac.uk/GamesDomain`.

DOOM

The distribution of computer games using the Internet has become so popular that one company in particular, id Software, has nearly turned the concept into an art form. In case you've been out to lunch, id Software, Inc., is the developer of DOOM, DOOM II, and Heretic. By offering fully playable versions of all their games on the Internet, this company created for itself an instant market when the final release (the commercial product), with all the bells and whistles, was released. In addition, the company also encouraged the development of what can only be described as an aftermarket industry, which now sees new shareware support tools and many additional playing fields or *wads* being placed on the Internet each month.

A number of id Software game archives are stored at various FTP sites, including mirrors of the host FTP archive at `ftp.cdrom.com` in the `/pub/idgames` directory. Alternatively, you can find a wealth of information about DOOM, including pointers to many World Wide Web FTP sites. DOOMgate, which is by far the most up-to-date DOOM WWW site, is at `http://doomgate.cs.buffalo.edu/`.

Apogee

If id Software is the writer of the most popular game, Apogee is the most prolific publisher of shareware games. With a software catalogue that includes Wolfenstein 3D, Commander Keen, and Duke Nukem, it is only natural that the company's software should also be available on the Internet.

For fans of Apogee software, the Games Domain has created a page providing direct access to all FTP sites containing Apogee shareware games. The http address for this page is `http://wcl-rc.bham.ac.uk/GamesDomain/Apogee`.

Newsgroups

Accompanying the many shareware games available using FTP, there are hundreds of newsgroups that discuss many of the more popular computer games.

alt.binaries

The `alt.binaries` area of USENET contains a few newsgroups that distribute the latest computer games as UUENCODED files stored in messages. Some of these are shown in Table 8.1.

Table 8.1. *alt.binaries* newsgroups.

Newsgroup	*Description*
`alt.binaries.descent`	The latest DOOM incarnation.
`alt.binaries.doom`	DOOM I and II wads and editors.
`alt.binaries.games.vga-planets`	Not another DOOM game—but a popular online computer game.
`alt.binaries.heretic`	Another DOOM-like game from id Software.
`alt.binaries.mac.games`	Games for the Apple Macintosh.

alt.games

If fighting with UUENCODE isn't your style, some of the newsgroups in `alt.games` may be more to your liking. These newsgroups contain discussions ranging from hints and tips to game cheats. To get you started, Table 8.2 offers a list of some of the more popular newsgroups; however, just because a game isn't listed here doesn't mean that it isn't covered on the Internet.

Table 8.2. Popular *alt.games* newsgroups.

Newsgroup	*Description*
`alt.games`	Watch this newsgroup for announcements about new sections and computer gaming in general.

Newsgroup	*Description*
`alt.games.apogee`	A lively discussion of the many shareware games released by Apogee.
`alt.games.dark-forces`	Having trouble winning at Dark Forces? Ask here for help.
`alt.games.descent`	Discussions and playing tips for Descent.
`alt.games.doom`	Enough said.
`alt.games.doom.announce`	This newsgroup is reserved for announcements about new wads, editors, and any other late-breaking DOOM news.
`alt.games.doom.ii`	When you've tired of DOOM, you're ready for DOOM II.
`alt.games.doom.newplayers`	This is a good place to start if you're new to DOOM. There are always people around who are willing to lend a helping hand.
`alt.games.dune-ii.virgin-games`	Dune, the computer game, not the book.
`alt.games.heretic`	DOOM with a crossbow.
`alt.games.playmaker-football`	It's not a shoot-'em-up, but for football fans it's just as much fun.
`alt.games.tiddlywinks`	Yes, there is even a newsgroup for this one.
`alt.games.ultima.dragons`	Adventure gaming at its best.
`alt.games.x-wing`	Star Wars for your PC.

If you thought that the `alt` newsgroups covered the topic of computer games well, you're in for a big surprise. The `rec.games`

area of USENET is also crammed full of game-related newsgroups. To get you started, Table 8.3 lists some of the more active discussion areas.

Table 8.3. Popular *rec.games* newsgroups.

Newsgroup	*Description*
`rec.games.backgammon`	In this newsgroup you don't even need a computer. Backgammon anyone?
`rec.games.computer.doom.editing`	You guessed it, more DOOM stuff.
`rec.games.corewar`	One of the more popular online games.
`rec.games.diplomacy`	Diplomacy buffs need look no further than this newsgroup.
`rec.games.rpg`	Role-playing games of all descriptions also receive good coverage on USENET.
`rec.games.mud`	There are also a number of newsgroups that deal with multi-user dungeons.
`rec.games.pinball`	If you've ever played pinball, check out this newsgroup.
`rec.games.programmer`	This is a good place to talk with people about writing computer games.
`rec.games.xtank.play`	If you haven't heard about Xtank, have a look here.

Hardware-Related Newsgroups

To close out this topic, there are a number of other newsgroups dealing with computer games written for specific computer platforms. Some of these newsgroups are listed in Table 8.4.

Table 8.4. Hardware-specific games newsgroups.

Newsgroup	*Description*
`alt.mac.games.binaries`	Computer game files for the Apple Macintosh.
`comp.os.os2.games`	OS/2- and Warp-related computer gaming issues.
`comp.sys.acorn.games`	Devoted to computer games written for the Acorn Microcomputer system.
`comp.sys.amiga.cd32`	Commodore may be dead, but its computer games live on in the `cd32` newsgroup.
`comp.sys.amiga.games`	For Amiga gaming discussion, this newsgroup is a good place to start.
`comp.sys.ibm.pc.games.flight-sim`	Flight simulators for those who love to fly.
`rec.games.video.3do`	The `3do` newsgroup.
`rec.games.video.atari`	Atari computer game machines also get a look in here.
`rec.games.video.cd-i`	CD-I, for those who have one.
`rec.games.video.nintendo`	Nintendo games machines are the topic of discussion here.
`rec.games.video.sega`	You can't mention Nintendo without someone saying Sega, so there is a newsgroup for it as well.

Online Games and the Internet

The Internet is not only a great source of computer game software; it also offers a number of games and gaming environments that you can play while online.

These games tend to follow one of three main threads. The first relates to role-playing games (RPGs) not unlike the adventure games made popular by software houses such as Sierra—the makers of Kings' Quest, Leisure Suit Larry, and Space Quest, to mention a few. The second group falls into the category of interactive games, such as chess or checkers, that allow you to play with other people across the Internet. Finally, the last group is literally play-by-Internet games, where you play against the remote computer.

MUDs

Without a doubt, the most well-known role-playing game environment on the Internet is the MUD (*multi-user dungeon* or *multi-user domain*, depending on who you talk to).

MUDs are in many ways similar to text-based adventure games. When you enter a MUD, you are placed into an electronically generated world that you can explore by typing commands such as **`north`**, **`south`**, **`up`**, and **`down`**. As you enter commands, the MUD responds with descriptions of your location, plus other important information. If you've ever played an adventure game, you will probably recognize the basic idea.

MUDs, however, contain one vital element that separates them from your run-of-the-mill adventure game—the human element. When you join a MUD, you enter a world that is populated by other people—people like yourself who have entered the MUD and, like yourself, want to win. But win what? Fame, fortune, power, strength, magical abilities, or maybe the hand of a fair maiden or a prince. It really depends on which MUD you are playing. There are a number of different types with varying rules and goals.

To participate in a MUD, you don't need any special program other than access to a telnet client. Apart from this, all you need is the domain name of a MUD and away you go. Using a telnet client, you can open a connection with a MUD called "The Final Challenge," whose domain name is `mud.primenet.com:4000`.

Once you enter the MUD itself, you are on your own. Part of the fun of playing a MUD is finding out how it works and learning its

layout. There are often thousands of rooms to explore, objects to find, and people to meet (and sometimes do battle with). All MUDs are operated by gods and other minor deities who can be called upon for assistance, although some will expect adoration and worship in return. If you are really good, maybe one day you too can become a god—the highest level of achievement in any MUD game.

With over 450 MUDs of various types to be found on the Internet, listing them all here would be impractical. So instead, let's turn again to the World Wide Web and the Games Domain for a list of some popular MUDs and links to other MUD information pages. The http address for this page is `http://wcl-s.bham.ac.uk/GamesDomain/mud.html`.

MOOs, MUSHes, and MUSE

In addition to MUDs, there are a number of other multiuser environments on the Internet. Like MUDs, they allow people to interact in an online environment. However, where MUDs lean toward combat with the forces of evil, these other environments tend to be places for social interaction.

These environments fall into three main categories: MOOs, MUSHes, and MUSE. MOOs and MUSHes are different types of social MUDs, some of which feature worlds that often simulate places made popular by novels and movies, while others feature historical or futuristic worlds. Of the two, MUSHes tend to more closely adhere to the rules of dice-based role-playing games, with some closely replicating tabletop games of the same name. MUSE, on the other hand, are educational or tutorial worlds used by schools and colleges to teach human interaction and social sciences.

The best place to find information about MOOs, MUSHes, and MUDs in general is a WWW site called the MUD Resource Collection. This site contains links to many games, plus related information including player guidelines, historical archives, and programming tutorials. The address for this site is `http://www.cis.upenn.edu/~lwl/mudinfo.html`.

However, for those of you who want to get started right away, Table 8.5 contains a short list of popular MUSHes and MOOs for you to explore.

Table 8.5. Popular MOOs and MUSHes.

Site Address	*Name*	*Description*
`sarcazm.resnet.cornell.edu:9000`	AngrealMOO	This is a role-playing MOO based on Robert Jordan's novel *The Wheel of Time.*
`omega.ru.ac.za:4201`	Elenium MUSH	This game is set one hundred years after the events told in David Eddings' *Elenium Trilogy.*
`colossus.acusd.edu:4444`	ChromeMUSH	This is a cyber-punk MUSH set in Sacramento, California, in the year 2030.
`omega.acusd.edu:9999`	Danse Macabre	You guessed it, it's a World of Darkness game—well, at least loosely. This time, the setting is Paris in 1356.
`dana.ucc.nau.edu:1892`	Elendor MUSH	This MUSH is based loosely on J.R.R. Tolkien's *The Lord of the Rings.*
`baymoo.sfsu.edu:8888`	BayMOO	This MOO is designed as a virtual reality world based around the San Francisco Bay Area.

Where to Find Other Games

As mentioned earlier, there are many other games on the Internet, some terminal based and others built around the World Wide Web. To play any of these games, all you need to know is the address of the site operating the game. Once you log on or open the appropriate Web page, instructions are usually provided to get you going.

There can be no doubt that the most concise list of online games ever compiled is Zarf's List of Interactive Games on the Web. This site contains links to every known WWW-based game and a number of Telnet-based games as well. The `http` address for this site is `http://www.cs.cmu.edu/afs/andrew/org/kgb/www/zarf/games.html`.

If your thirst for online games still isn't satisfied, check out the other sites listed at the Games Domain. Many of these also contain links to online games.

Online News and Magazines

If playing games isn't your style, maybe browsing though online newspapers and electronic magazines is.

Ever since the first text editor was developed for computers, people have sought ways to publish their comments, criticisms, and views of the world. In the early days, many of these commentaries, or *e-zines* (electronic magazines), were disk based. A number of articles would be collected on a disk with some pictures, and maybe a game or two or the source code of some program. The disks would then be distributed by the postal service or spread from hand to hand around university campuses and offices.

With the advent of widespread access to bulletin boards and modems, the popularity of disk-based magazines began to dwindle. In their place came electronically distributed versions. On the whole, the content did not change much, but now the publishers of these e-zines could reach a wider audience without the hassles and limitations of disk-based publication. Then came public access to the Internet, and again e-zine publishers adapted to meet the new technology.

Today, there are thousands of electronic magazines and newsletters published all over the world on a wide variety of topics, ranging from general interest to highly specific publications. Many of these e-zines are now distributed on the Internet. Some are delivered by e-mail using mailing lists, while others can be downloaded from various FTP and Gopher sites.

E-zines are not the only type of electronic publication available on the Internet. Since the arrival of the World Wide Web, a popular new concept has been sweeping the Internet—Web publishing. Of all the services offered on the Internet, none is more suited to the wide-spread delivery of electronic news and magazines than the World Wide Web. As a result, over the last two years hundreds of publications of all descriptions have begun to spring up all over the Web.

This section looks at some of the different types of e-zines, WWW publications, and electronic newspapers that are now available on the Internet. In addition, it also looks at the some of the best places to find new publications.

E-Zines

To get the ball rolling, first look at one of the oldest forms of electronic publishing, and still one of the most popular: electronic magazines, or e-zines.

The Internet is by far the most effective, and possibly the cheapest, method of electronic publication currently available. If you have access to a word processor and a modem, you can become an Internet publisher. While this may not be everyone's idea of a great way to spend the weekend, for many people it is just that—a hobby or, in many cases, a labor of love.

One of the more popular e-zine WWW pages currently lists over 350 well-known e-zines. These publications cover topics as diverse as cyberculture, independent film making, time-wasting, and philosophical discussions at Phil and Bernie's Philosophical Steakhouse. In addition, there are literally thousands of other private publications devoted to just about every topic imaginable.

A large majority of these magazines are delivered by e-mail, although some of the more popular ones also operate Web pages

that contain copies of not only the current edition, but also archives of back issues and, in many cases, subscription information. A small number are also available using FTP or Gopher, but most of these e-zines are being phased out in favor of the more popular World Wide Web distribution method.

To find one of the more popular e-zines, let's look first at the WWW site operated by a guy called John Labovitz. When John discovered that there was no concise listing of e-zines on the Internet, he set off on a personal journey to bring such a list to the world. The result was John Labovitz's E-Zine List which can be found at `http://www.meer.net/~johnl/e-zine-list/index.html`.

This site is regarded by many as the most up-to-date and accurate listing of currently available e-zines. At the moment, the list is available online in alphabetical order, or you can download a copy using FTP. However, by the time you read this book, a search tool should have been added to assist you with your e-zine exploration. There are currently over 350 e-zines listed on this site, which includes instructions on how to subscribe to each, as well as links to those e-zines whose publishers operate WWW, Gopher, or FTP sites.

One of the more impressive e-zines pointed to by this list is the Netsurfer Digest. This e-zine is published on monthly and is available via e-mail or online using the World Wide Web. The link on John Labovitz's e-zine listing takes you straight to the Netsurfer WWW home page. From here you can browse though the latest edition, look up articles from past editions, and subscribe to the e-mail version.

Subscribing to an e-mail version of any e-zine is the best way to read these publications because you can look at them without being connected to the Internet. To encourage you to use this service, Netsurfer delivers each new edition to your CompuServe mailbox as a HTML page ready for you to load into your World Wide Web navigator. You can subscribe to Netsurfer by clicking on the word `Subscribe` in the first paragraph of the Netsurfer home page. Doing this opens a WWW form where you can enter your e-mail address and request a subscription.

Once you have subscribed to Netsurfer, you will begin to receive a monthly e-mail message containing the latest edition. To read Netsurfer, follow these steps:

1. Save this message as a file with an `.htm` extension.
2. Open your World Wide Web navigator.
3. Using Spry Mosaic, open the **F**ile menu and select the Open **L**ocal File option.
4. Select the file in which you saved a copy of the Netsurfer e-mail message and click on the OK button.

HotWired

Since the arrival of the World Wide Web, a new type of electronic magazine has begun to appear on the Internet—the interactive magazine. Unlike a traditional e-zine that you read and then put away, an interactive magazine invites you to become an active participant. After reading an article, you can add your own comments, criticisms, or even editorials.

At the leading edge of this type of publication technology, it isn't surprising to find one of the leading-edge magazines: *Wired.* In a bold move, *Wired* has created an alter ego on the Internet called HotWired. To open HotWired, use `http://www.hotwired.com/`.

This Web site is styled after *Wired* and offers the same level of insight into the emerging online world that people have come to expect. Where HotWired is different, however, is that it lets you become a part of the magazine by allowing you to make your own editorial comments, much like a global online letter to the editor. This level of interaction means that HotWired is always changing and growing as new members add their thoughts and ideas to the mix of cultures and ideologies.

The Trib

Reading magazines may pass the time, but there are situations when what you really want is the latest news from around the world.

There's no better place to turn when you want the news than a newspaper or, in this case, the Internet newspaper. At `http://www.trib.com`, the news of the day is available online as it happens. Operated by the Casper *Star-Tribune* in Wyoming, this Web site provides you with up-to-date national and global news, as well as links to many newsfeeds and newspapers operated by news organizations all around the world.

One of the main features of this service is its direct link to the Associated Press online news service—a first for the Internet—which allows you to read about the latest news as it happens. You can also search the Associated Press archives via this link and follow up on past news stories. The Trib also provides a link to CNN (Cable News Network), which offers the unique ability to download video clips of news stories.

The Electronic Newsstand

So far you have looked at some of the magazines and journals published on the Internet, but what about the thousands of print magazines published each month? Many of these publications are also represented on the Internet at the Electronic Newsstand, whose address is `http://www.enews.com/`. It can also be reached by Telneting to `enews.com`.

Every month, the magazines with a listing on The Electronic Newsstand upload copies of various articles and features published in the current print editions. Many also upload a copy of the table of contents to give you a better indication of what the magazine contains. Using The Electronic Newsstand, you can browse though any of the magazines and read the articles that have been uploaded.

After reading the articles, if you like what you have read, you can also use The Electronic Newsstand to subscribe to the printed edition. Due to a special arrangement with publishers, in most cases you can receive significant discounts or other benefits by subscribing online.

News Filtering

To help people keep track of what's happening on USENET, Stanford University has developed a news filtering service called Netnews as a part of its electronic library project.

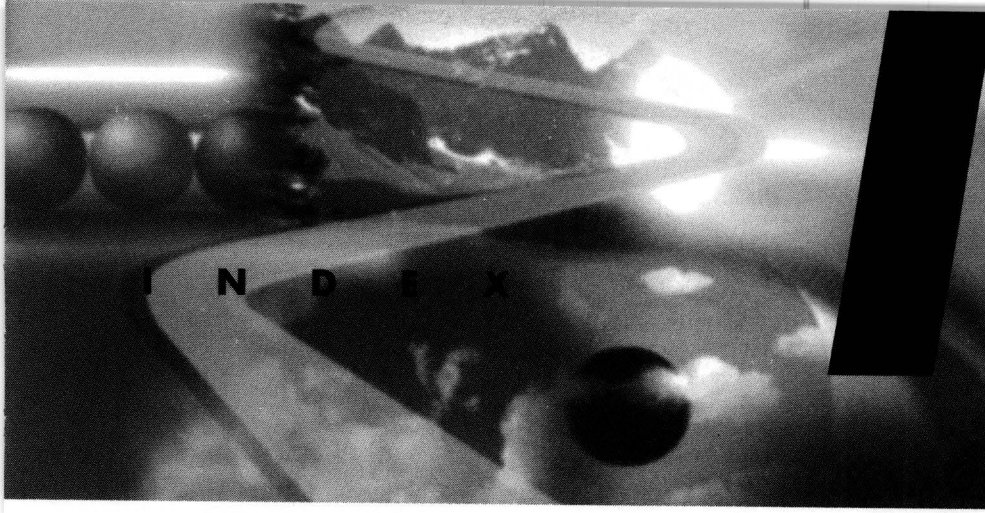
Netnews lets you define search profiles for USENET. In these profiles you nominate keywords that you want Netnews to watch out for. Then, every day Netnews scans the thousands of messages that are posted to newsgroups all over USENET and captures any that contain the keyword you have defined. All of these captured messages are collated and sent to you on a regular basis via e-mail.

Access to Netnews is available either through an e-mail list server-style service or a more flexible World Wide Web page. People interested in investigating in the e-mail service should send mail to `netnews@db.stanford.edu` with the word `HELP` in the body of the message. On the other hand, if you prefer the World Wide Web, the Netnews World Wide Web home page can be found at `http://woodstock.stanford.edu:2000/`.

Additional Options

Here are a few selections for more entertainment on the Net:

- Entertainment-Yahoo: Entertainment section from Yahoo (`http://www.yahoo.com/Entertainment/`).
- Coke Machines: bsy's List of Internet Accessible Coke Machines (`http://www.cs.cmu.edu:8001/afs/cs.cmu.edu/user/bsy/www/coke.html`).
- The Dominion: Sci-Fi Channel (`http://www.scifi.com`).
- Games: Games, FAQs, and other entertainment resources (`http://wcl-rs.bham.ac.uk/GamesDomain`).
- Interactive games: Zarf's List of Interactive Games on the Web (`http://www.cs.cmu.edu:8001/afs/cs.cmu.edu/user/zarf/www/games.html`).
- WWW/Sports: World Wide Web of Sports, Spanning the globe to bring you a constant variety of sports information (`http://tns-www.lcs.mit.edu/cgi-bin/sports`).



Symbols

42—Deep Thought site, 92

A

accessing World Wide Web, 16-17
Adams, Douglas, 92
addressing, relative, 26-27
airline site, 102
alt.binaries newsgroups, 136
alt.games newsgroups, 136-137
American/International colleges sites, 120
America's Funniest Home Hypermedia page, 93-94
Andreesen, Marc, 12
animal site, 90-91
Apogee shareware game sites, 135
ArchiePlex, 81-82
Arctic Adventours site, 101
Arizona site, 119-120
arts, displaying, 20
AskERIC site, 123
Austin (Texas) site, 110
Australia (Virtual Tourist), 64
Auto Pages of Internet site, 100-101

B

bank sites, 103-104
BBSs, Mother-of-all BBS, 76-77
Berlin (Germany) home page, 61
Berners-Lee, Tim, 11
Best of the Net (GNN), 87
BizNet Technologies site, 106
Boschert, Dr. Ken, 90
Brazil (Virtual Tourist), 65
browsers, 2, 9-10, 12, 23
business, *see* commercial sites
Businesses in Utah site, 110

C

California
 Claremont High School site, 118
 Virtual Tourist, 65
Canada
 SchoolNet, 122
 Virtual Tourist, 65-66
Canadian Airlines International site, 102
Cape Town (South Africa) home page, 62
Capital One site, 108
Carnegie Mellon University, 121
Cello browser, 12
Center for Global Communications home page, 64
Cerf, Vint, 107
CERN (European Laboratory for Particle Physics), 11, 57
chatting, WebChat, 95-96
Chile (Virtual Tourist), 65
China (Virtual Tourist), 64
city home pages
 Austin (Texas), 110
 Berlin (Germany), 61
 Cape Town (South Africa), 62
 Izmir (Turkey), 61-62

Oxford (England), 59
Paris (France), 59
Rio de Janeiro (Brazil), 65
St. Petersburg (Russia), 60-61
Stockholm (Sweden), 60
Claremont High School site, 118
clients (FTP), Spry Mosaic as, 45-47
Colorado site, 119
commands, Options menu (Spry Mosaic), 36-44
CommerceNet, 102
commercial sites, 97-99
Arctic Adventours, 101
Austin (Texas), 110
Auto Pages of Internet, 100-101
Bank of America, 103
BizNet Technologies, 106
Businesses in Utah, 110
Canadian Airlines International, 102
Capital One, 108
CommerceNet, 102
Compaq Computer Corporation, 104
Corporate Agents, Inc., 109
Digital Equipment, 103-104
directory, 110-113
distance presentations, 22
Downtown Anywhere, 105-106
Dun & Bradstreet, 104
Federal Express, 104-105
Graphics Visualization and Usability Center, 109
Hewlett-Packard, 103
InContext Systems, 101
Interesting Business Sites on the Web, 99-100
Internet Plaza, 106
Internet Shopping Network, 107
internetMCI, 107
Lockheed Martin Missiles & Space, 103
NetMarket, 106
OfficeMax, 107
Open Market's Commercial Sites Index, 99
PAWWS (Portfolio Accounting World Wide from Security), 108
Quote.Com, 108-109
Spry City, 100
Toronto-Dominion Bank, 104
Compaq Computer Corporation site, 104
comparing browsers, 9-10
computer company sites, 103-104
configuring Spry Mosaic, 36-44
control console (Spry Mosaic main window), 29-35
Corporate Agents, Inc. site, 109
creative arts, displaying, 20
credit cards, obtaining, 108
CUSI (Configurable Unified Search Engine), 84-86
customer support, 19-20

D

data entry forms, 50-52
DeweyWeb site, 123
Digital Equipment site, 103-104
direct Internet connections, 16-17
directories, 68
American/International colleges, 120
commercial sites, 110-113
EINet Galaxy, 74-75
entertainment sites, 148
Games Domain, 141
Global Network Navigator (GNN), 72-73
Interesting Business Sites on the Web, 99-100
John Labovitz's E-Zine List, 145
Mother-of-all BBS, 76-77
Open Market's Commercial Sites Index, 99
Special Internet Connections list, 68-69
Spry City, 100
Spry HotLand, 75-76
The Whole Internet Catalog, 70-71
WWW Virtual Library, 73-74
Yahoo, 69-70
document-creation software, 101
documents, saving directly to hard drives, 36-37
domain names, 26
DOOM (id Software) sites, 135
Downtown Anywhere site, 105-106
Dun & Bradstreet site, 104

E

e-mail, 44-45
E-Zine List (John Labovitz's), 145
Edit menu (Spry Mosaic), 29
education
AskERIC site, 123
DeweyWeb site, 123
future, 22

Global Schoolhouse site, 124-125
JASON site, 116
Latitude28 Schoolhouse site, 124
SchoolNet, 122
Texas Education Network site, 125
tutorial module sites, 122
U.S. Department of Education's site, 123
university course-material sites, 120-121
Web 66 site, 123-124
Web site directory, 125-131
see also schools; universities
EINet Galaxy, 74-75
electronic magazines (e-zines), 144-146
Electronic Newsstand, 147
Electronic Zoo site, 90-91
England (Virtual Tourist), 59
entertainment
directory, 148
games, 133-143
interactive, future, 21
Internet Movie Database, 88-90
Online Museum of Singapore Art and History Web site, 63
Erasmus University home page, 60
ESPNET SportsZone, 88
European map (Virtual Tourist), 54-56

F

Federal Express site, 104-105
file extensions, .htm/.html, 31
File menu (Spry Mosaic), 29
file protocol definition, 25
filenames, 26
Filo, David, 69
finance sites
Bank of America, 103
Capital One, 108
Dun & Bradstreet, 104
PAWWS (Portfolio Accounting World Wide from Security), 108
Quote.Com, 108-109
Toronto-Dominion Bank, 104
forms, 50-52
France (Virtual Tourist), 58-59
FTP
comparing with WWW, 10
game-related sites, 134-135
searching with ArchiePlex, 81-82
Spry Mosaic as client, 45-47
ftp protocol definition, 25

G

games, 133-143
Games Domain site, 134, 141
Germany
Patch American High School site, 118-119
Virtual Tourist, 61
Global Schoolhouse site, 124-125
GNN (Global Network Navigator), 72-73
Best of the Net, 87
GNN menu (Spry Mosaic), 30
Gopher, comparing with WWW, 10
gopher protocol definition, 25
government site, 91-92
graphical design, 17-18
graphics, autoloading inline images, 37-38
Graphics Visualization and Usability Center site, 109
Greece (Virtual Tourist), 61

H

hardware-specific games newsgroups, 138-139
Hawai'i (Virtual Tourist), 64
Help menu (Spry Mosaic), 30
Hewlett-Packard site, 103
Hillside Elementary School site, 117
Hitchhiker's Guide to the Galaxy trilogy site, 92
HotLand (Spry), 75-76
hotlinks, 28
HotWired interactive magazine, 146
.htm/.html file extensions, 31
HTML (HyperText Markup Language), 15-16
HTTP (HyperText Transfer Protocol), 13-15, 27
http protocol definition, 25
hyperlinks, 2
jumping, 58
hypertext, 2, 4, 23-24

I

id Software (DOOM) sites, 135
il manifesto Web site, 61
InContext Systems site, 101
indexes
EINet Galaxy, 74-75
finding, 83-86
Lycos, 78-79

Open Market's Commercial Sites Index site, 99
Spry Internet Wizard, 79-80
indirect Internet connections, 16-17
industrial malls, 105-107
inline images, autoloading, 37-38
interactive entertainment, future, 21
interactive games, 140
Interesting Business Sites on the Web site, 99-100
Internet, 4-5
connections, 16-17
Understanding the Internet site, 94
Internet Movie Database, 88-90
Internet Plaza site, 106
Internet Shopping Network site, 107
Internet Wizard (Spry), 79-80
internetMCI site, 107
Israel (Virtual Tourist), 62
Italy (Virtual Tourist), 61
Izmir (Turkey) home page, 61-62

J–L

Japan (Virtual Tourist), 64
JASON site, 116
Jefferson (Thomas) High School for Science and Technology site, 118
John Labovitz's E-Zine List, 145
jumping, 58

Korea (Virtual Tourist), 63

Labovitz, John, 145
Latitude28 Schoolhouse home page, 124
loading inline images, autoloading, 37-38
Lockheed Martin Missiles & Space, 103
Lycos, 78-79

M

Macmillan Publishing site, 94-95
Macom Networking home page, 62
magazines, 143-146
mailto e-mail (Spry Mosaic), 44-45
mailto protocol definition, 25
Malaysia (Virtual Tourist), 62-63
Maricopa Community College District site, 119-120
Massachusetts (Virtual Tourist), 66
menu bar (Spry Mosaic main window), 29-30
methods, 14
Mexico (Virtual Tourist), 65
Middle East Technical University, 62
Minnesota site, 117
MIT (Massachusetts Institute of Technology) Web site, 66
MOOs, 141-142
Mosaic, 12
Spry Mosaic, 27-52
Mother-of-all BBS, 76-77
movie site, 88-90
MUD Resource Collection site, 141
MUDs (multi-user dungeons *or* domains), 140-141
multimedia, 6
Murray (Virginia L.) Elementary School site, 117-118
MUSE, 141-142
museum site, 63
MUSHes, 141-142

N

names, domains/files, 26
Navigate menu (Spry Mosaic), 29
NCSA (National Center for Supercomputing Applications), 12
NECTEC home page, 63
The Netherlands (Virtual Tourist), 60
NetMarket site, 106
Netnews news filtering service, 147-148
Netscape search page, 84
Netsurfer Digest, 145-146
New Brunswick province home page, 66
news, 143-144
Electronic Newsstand, 147
future, 21-22
il manifesto newspaper Web site, 61
Netnews news filtering service, 147-148
The Trib newspaper, 146-147
news protocol definition, 25
newsgroups
accessing through Spry Mosaic, 47-50
content descriptions, displaying, 39
game discussions, 135-139
Norway
Arctic Adventours site, 101
Virtual Tourist, 60

O–P

OfficeMax site, 107
Open Market's Commercial Sites Index site, 99

Options menu (Spry Mosaic), 29, 36-44
ordering products, 19
The Oslonett Marketplace home page, 60
Oxford home page, 59

Paris (France) home page, 59
Patch American High School site, 118-119
paths, 26
PAWWS (Portfolio Accounting World Wide from Security APL) site, 108
Personal Favorites menu (Spry Mosaic), 29-30
play-by-Internet games, 140
presentations, future, 22
products, browsing/ordering, 19
protocols
 HTTP (HyperText Transfer Protocol), 13-15, 27
 URL definitions, 24-25
publications, 143-144
 electronic magazines (e-zines), 144-146
 Electronic Newsstand, 147
 HotWired interactive magazine, 146
 il manifesto Web site, 61
 The Trib newspaper, 146-147
publishing, future, 21

Q–R

Quadralay Corporation site, 110-113
Quote.Com site, 108-109

Randall (Neil) home page, 86
reason lines, 14
rec.games newsgroups, 137-138
relative addressing, 26-27
research dissemination, 18-19
Rio de Janeiro (Brazil) home page, 65
RPGs (role-playing games), 140
Russia (Virtual Tourist), 60-61

S

saving documents directly to hard drives, 36-37
Scandinavia (Virtual Tourist), 60
school sites
 Claremont High School, 118
 Hillside Elementary School, 117
 Maricopa Community College District, 119-120
 Patch American High School, 118-119
 Smoky Hill High School, 119
 Thomas Jefferson High School for Science and Technology, 118
 Virginia L. Murray Elementary School, 117-118
 see also education; universities
science site, 116
search tools, 77
 ArchiePlex, 81-82
 finding, 83-86
 Lycos, 78-79
 Spry Internet Wizard, 79-80
 WAISgate, 82-83
servers, 27
SGML (Standard Generalized Markup Language), 15
shopping at home, 19
Shopping Network site (Internet), 107
Singapore (Virtual Tourist), 63
Smoky Hill High School site, 119
South Africa (Virtual Tourist), 62
space site, 103
Spain (Virtual Tourist), 59
Special Internet Connections list, 68-69
sports site, 88
Spry City, 100
Spry HotLand, 75-76
Spry Internet Wizard, 79-80
Spry Mosaic, 27-50
St. Petersburg (Russia) home page, 60-61
status bar (Spry Mosaic main window), 35-36
Sweden (Virtual Tourist), 60
Switzerland (Virtual Tourist), 56-58

T

technical support, 19-20
telepresence, 116
telnet protocol definition, 25
Texas
 TENET (Texas Education Network) site, 125
 University of Texas at Austin site, 120-121
Thailand (Virtual Tourist), 63
Thomas Jefferson High School for Science and Technology site, 118
titles (documents), 34
toolbar (Spry Mosaic main window), 30-33
Toronto-Dominion Bank site, 104

travel
Arctic Adventours site, 101
Australia, 64
Brazil, 65
California, 65
Canada, 65-66
Chile, 65
China, 64
France, 58-59
Germany, 61
Greece, 61
Hawai'i, 64
Israel, 62
Italy, 61
Japan, 64
Korea, 63
Malaysia, 62-63
Massachusetts, 66
Mexico, 65
The Netherlands, 60
Norway, 60
Russia, 60-61
Singapore, 63
South Africa, 62
Spain, 59
Sweden, 60
Switzerland, 56-58
Thailand, 63
Turkey, 61-62
United Kingdom, 59
The Trib newspaper, 146-147
Turkey (Virtual Tourist), 61-62
tutorial module sites, 122

U

U.S. Department of Education's site, 123
Understanding the Internet site, 94
United Kingdom (Virtual Tourist), 59
university sites
Carnegie Mellon University, 121
course-material sites, 120-121
Erasmus University, 60
International University of Japan, 64
Middle East Technical University (METU), 62
MIT (Massachusetts Institute of Technology), 66
Oxford, 59
UCLA (University of California at Los Angeles), 65
Universidad Tecnica Federico Santa Maria in Valparaiso, Chile, 65
University of Hawai'i, 64
University of Texas at Austin, 120-121
URLs (Uniform Resource Locators)
components, 24-27
document information, displaying, 34-35
Utah site, 110

V-W

Viola browser, 12
Virginia
Thomas Jefferson High School for Science and Technology site, 118
Virginia L. Murray Elementary School site, 117-118
Virtual Library (WWW), 73-74
Virtual Tourist, 54-66
voting, future, 21

wais protocol definition, 25
WAISgate, 82-83
weather, University of Hawai'i Web site, 64
Web 66 site, 123-124
Web Site of the Week competition, 94-95
WebChat, 95-96
Webster's dictionary, 70
White House site, 91-92
Whole Frog Project home page, 122
The Whole Internet Catalog, 70-71
window components (Spry Mosaic), 28-36
World Wide Web
accessing, 16-17
concept, 2-4
definition, 4-8
future, 21-22
history, 11-13
uses, 17-20
WWW Consortium home page, 66
WWW Virtual Library, 73-74

X-Z

Yahoo, 69-70
Yang, Jerry, 69
Yanoff's Special Internet Connections list, 68-69

Zarf's List of Interactive Games on the Web, 143
zoo site, 90-91

Add to Your Sams Library Today with the Best Books for Programming, Operating Systems, and New Technologies

The easiest way to order is to pick up the phone and call

1-800-428-5331

between 9:00 a.m. and 5:00 p.m. EST.

For faster service please have your credit card available.

ISBN	Quantity	Description of Item	Unit Cost	Total Cost
0-672-30737-5		The World Wide Web Unleashed, Second Edition	$39.99	
0-672-30714-6		The Internet Unleashed, Second Edition	$35.00	
0-672-30667-0		Teach Yourself Web Publishing with HTML in a Week	$25.00	
1-57521-005-3		Teach Yourself More Web Publishing with HTML in a Week	$29.99	
0-672-30764-2		Teach Yourself Web Publishing with Microsoft Word in a Week	$29.99	
0-672-30718-9		Navigating the Internet, Third Edition	$22.50	
1-57521-004-5		The Internet Business Guide, Second Edition	$25.00	
0-672-30595-X		Education on the Internet	$25.00	
0-672-30669-7		Plug-n-Play Internet	$35.00	
0-672-30765-0		Navigating the Internet with Windows 95	$25.00	
0-672-30719-7		Navigating the Internet with OS/2 Warp	$25.00	
		Shipping and Handling: See information below.		
		TOTAL		

❑ 3 ½" Disk

❑ 5 ¼" Disk

Shipping and Handling: $4.00 for the first book, and $1.75 for each additional book. Floppy disk: add $1.75 for shipping and handling. If you need to have it NOW, we can ship product to you in 24 hours for an additional charge of approximately $18.00, and you will receive your item overnight or in two days. Overseas shipping and handling adds $2.00 per book and $8.00 for up to three disks. Prices subject to change. Call for availability and pricing information on latest editions.

201 W. 103rd Street, Indianapolis, Indiana 46290

1-800-428-5331 — Orders 1-800-835-3202 — FAX

1-800-858-7674 — Customer Service

Book ISBN 1-57521-050-9



U.S. Robotics®
The Intelligent Choice in Information Access

sams net

a Macmillan Computer Publishing Company

$12.99 US
$15.99 CAN
£11.50 UK

part number 1.024.424

7 52063 10509 2

ISBN 1-57521-050-9

90000

9 781575 210506